U-matic

VIDEOCASSETTE PLAYER

VP-5040

SONY®

SERVICE MANUAL

SPECIFICATIONS

System

Video recording	Rotary two-head helical scan system
Luminance	FM recording
Color signal	Converted subcarrier direct recording
Video signal system	CCIR standards, PAL or SECAM color EIA standards, NTSC 4.43 color

Video

Output	
VIDEO OUT	BNC type x 1 1.0 V(p-p) ±0.2 V(p-p), 75 ohms, unbalanced, sync negative
TV	8 pin x 1
Horizontal resolution	250 lines
Signal-to-noise ratio	More than 45 dB

Audio

Output	
LINE OUT CH-1, CH-2	Phono jack 1 in each −5 dB (47 kohm load)
AUDIO MONITOR	Minijack x 1 −5 dB (with 47 kohm load)
TV	8-pin x 1
Signal-to-noise ratio	More than 48 dB (at 3% distortion) Both channels 1 and 2
Frequency response	50 - 15,000 Hz (channels 1 and 2)

Special functions

Pause	A still picture is obtained, with automatic long pause function
Search	Possible (about 5 times of normal speed in forward and reverse direction)
Tracking control	Possible
Skew control	Possible
Dropout compensator	Internal

Tape transport

Tape speed	9.53 cm/sec (3 3/4 inches)
Playback time	60 min (with KCA-60K)
Fast forward and rewind time	within 4 min (with KCA-60K)
Wow and flutter	±0.25% p-p (DIN)
Tape compatibility	U-matic video cassette tape
Usable tape	KCA, KCS, KSP type tape

General

Power requirements	220 – 240 VAC ± 10%, 50/60 Hz ± 10%
Power consumption	53 W
Operating position	Horizontal
Strorage temperature	−20°C to +60°C (−4°F to +140°F)
Operating temperature	5°C to 40°C (41°F to 104°F)
Dimensions	Approx. 424 x 193 x 489 mm (w/h/d) (16 3/4 x 7 5/8 x 19 3/8 inches) including projecting parts and controls
Weight	Approx. 16 kg (35 lb 4 oz)
Accessories supplied	AC power cord (1)

Optional accessories

Color video monitor Sony CVM, PVM series
Remote control unit RM-690
Video and audio distributor DA-500
Video and audio switcher VCS-500
VTR selector RM-V5
Cleaning cassette KC-1C
Monitor connecting cable VMC-3P (3 m), VMC-5P (5 m), VMC-10P (10 m)
RF kit RFK-660UCE/660UB/660UF/660CH
Rack mount kit RMM-507

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SECTION 1
GENERAL DESCRIPTION

1-1. FEATURES

Front loading system
Almost all of the functions including the cassette insertion can be controlled on the front panel. So the unit can easily be operated, and be mounted into the rack easily, and the space for installing the unit is saved.

Search operation
Playback at about 5-times normal speed is possible in both forward and reverse directions.

LED time counter
The time counter reads the CTL signals recorded on the tape and the LEDs indicate the point on the tape in seconds and minutes.

Automatic tape transport operation
The PROGRAMMED OPERATION selector allows you to locate a particular point on the tape easily and quickly, and also to play back a portion on the tape repeatedly.

Still picture
When the tape is stopped with the PAUSE button during playback, a still picture can be obtained. The guard band noise is limited to the upper or lower part of the screen so that the still picture is easy to see.

Stable playback picture
The servo system using a direct drive capstan motor and drum motor, and the digital servo IC developed by Sony assures a stable tape transport which reduces tape jitter.

Moisture detector
When moisture condenses on the video head drum, the moisture detector is activated and the machine stops to avoid possible tape damage. The AUTO OFF indicator lights to indicate moisture condensation.

Long pause mode
When the tape is stopped in the pause mode for a long period of time, the machine automatically enters the long pause mode to avoid possible damage to the tape.

Remote control
The machine can be remotely controlled with an optional remote control unit.

Logic control
The logic control system allows you to change modes without pressing the STOP button.

Full automatic rewind
The tape is automatically rewound to the beginning when it runs to the end.

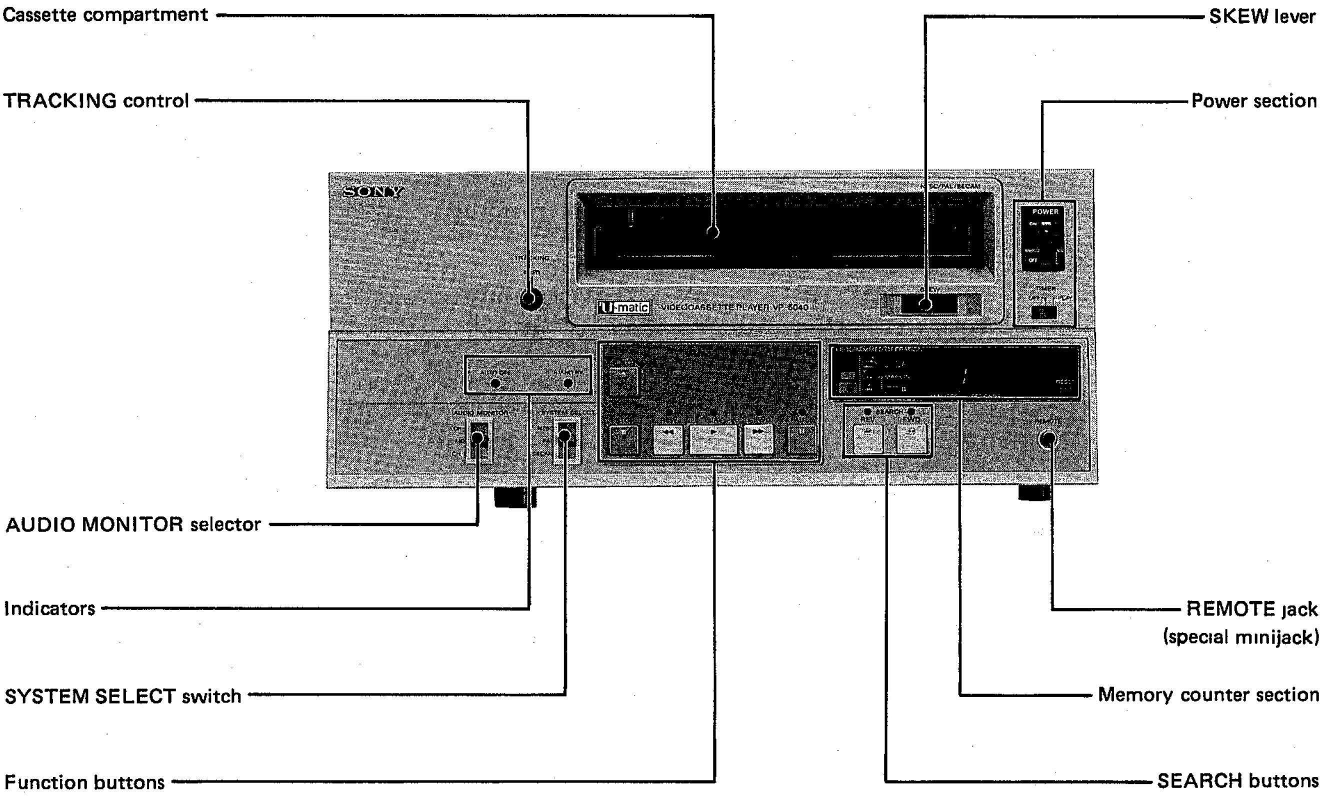
Timer operation
With the aid of a commercially available timer, playback can be started and stopped when the player is unattended.

Compact and lightweight design
The machine is compact and lightweight so that it can easily be mounted into the rack and the space for setting the machine can be saved.

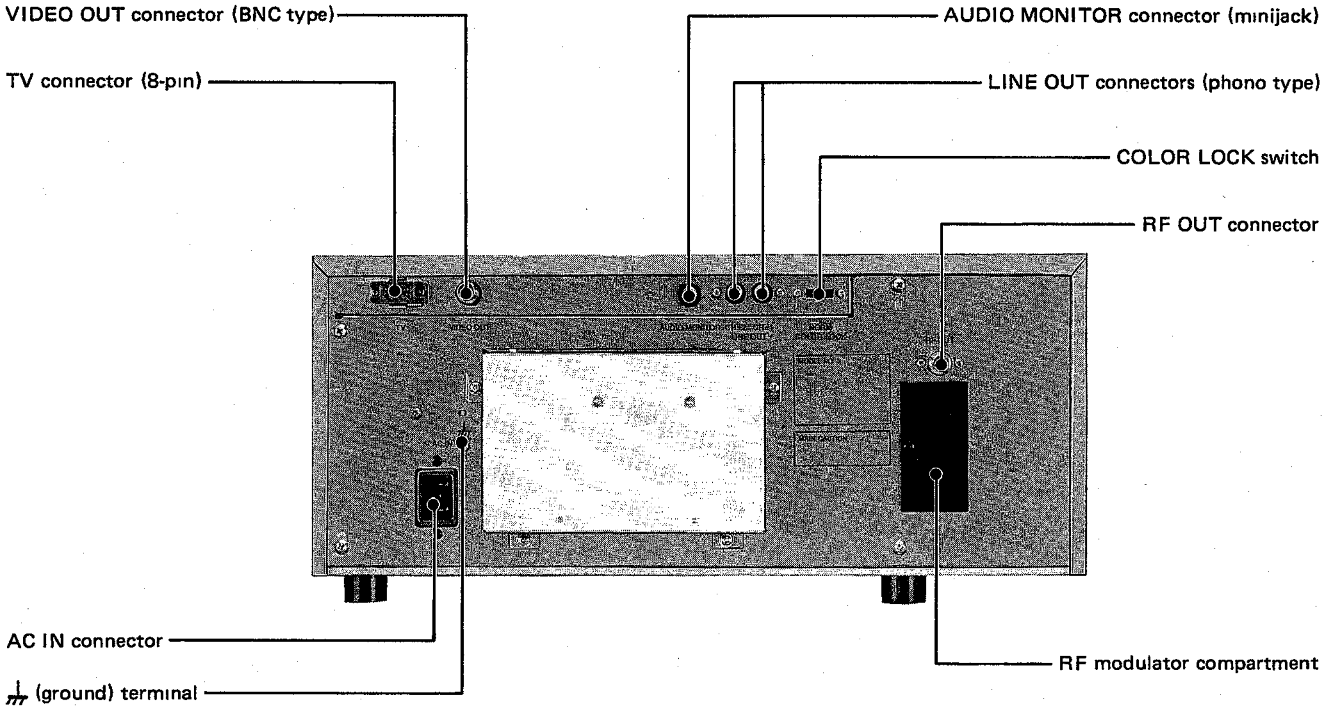
No power adaptation
Thanks to high efficiency switching regulator developed by Sony, the unit can be operated with a wide range of power voltages and frequencies without power adaptation.

1-2. LOCATION OF PARTS AND CONTROLS

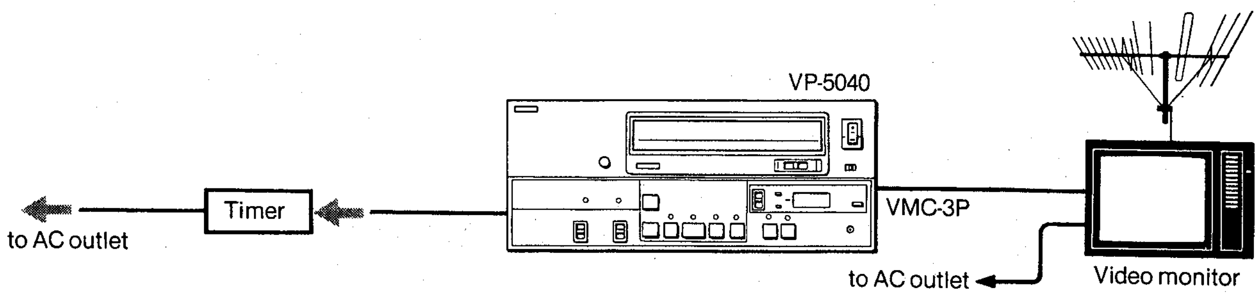
FRONT PANEL


Cassette compartment
SKEW lever
TRACKING control
Power section
AUDIO MONITOR selector
Indicators
REMOTE jack (special minijack)
SYSTEM SELECT switch
Memory counter section
Function buttons
SEARCH buttons

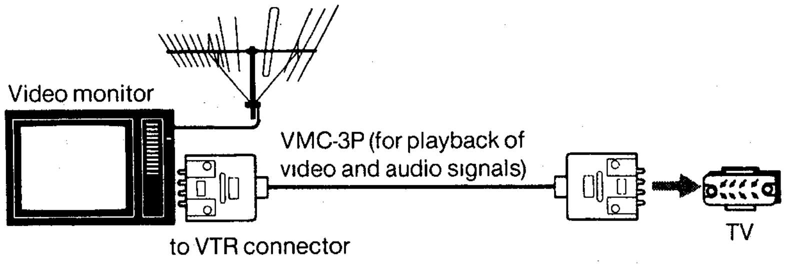
REAR PANEL


VIDEO OUT connector (BNC type)
AUDIO MONITOR connector (minijack)
TV connector (8-pin)
LINE OUT connectors (phono type)
COLOR LOCK switch
RF OUT connector
AC IN connector
RF modulator compartment
⏚ (ground) terminal

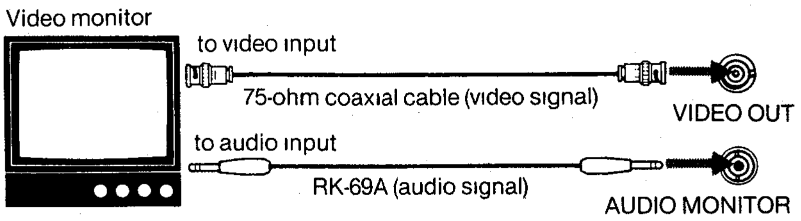
1-3. CONNECTION


VP-5040
Timer
to AC outlet
VMC-3P
to AC outlet
Video monitor

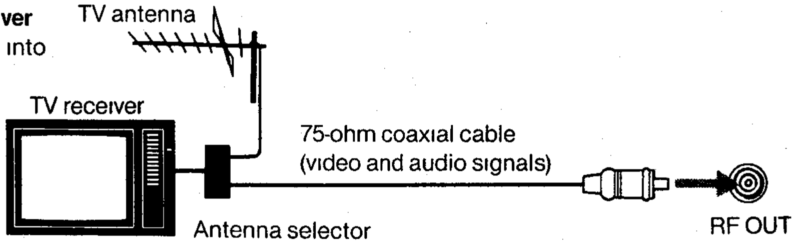
When the video monitor has an 8-pin VTR connector

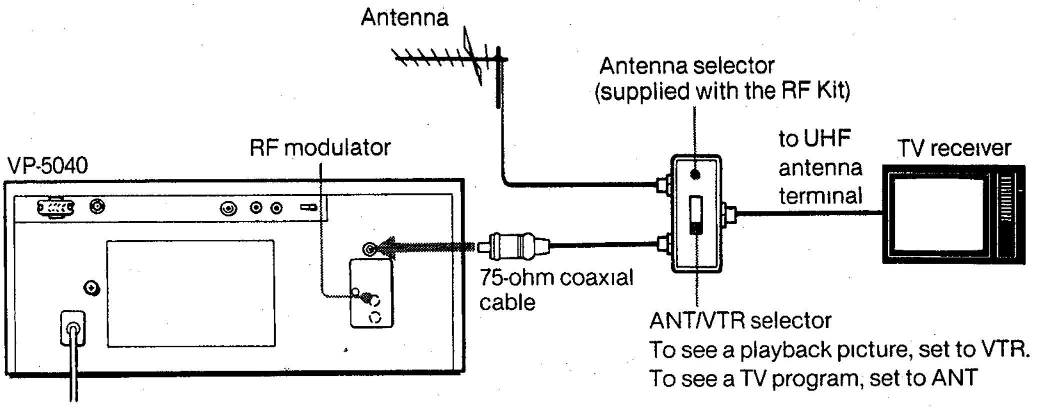

Video monitor
VMC-3P (for playback of video and audio signals)
to VTR connector
TV

When the video monitor does not have an 8-pin VTR connector


Video monitor
to video input
75-ohm coaxial cable (video signal)
VIDEO OUT
to audio input
RK-69A (audio signal)
AUDIO MONITOR

Playback on a conventional TV receiver
An RF modulator should be inserted into the RF modulator compartment.
•For details, see page 19.

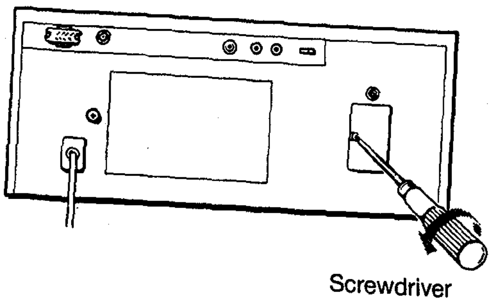

TV antenna
TV receiver
75-ohm coaxial cable (video and audio signals)
Antenna selector
RF OUT

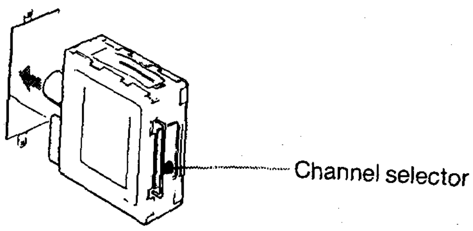

Antenna
Antenna selector (supplied with the RF Kit)
to UHF antenna terminal
TV receiver
VP-5040
RF modulator
75-ohm coaxial cable
ANT/VTR selector

To see a playback picture, set to VTR.
To see a TV program, set to ANT

1-4. INSTALLATION OF RF MODULATOR

1 Loosen the screw on the RF modulator compartment, and remove the lid.





2 Install the RF modulator into the compartment aligning the direction properly.

1-5. OPERATION

Pause Mode

Press the PAUSE button. The tape stops and a still picture will appear on the monitor screen.

To resume playback, press the PAUSE button again or press the PLAY button.

The long pause mode

If the pause mode continues for about 8 minutes, the tape around the head drum automatically slackens to protect the video heads and the tape, and the still picture disappears. This is called the long pause mode.

Search Operation

The SEARCH buttons allow you to view the playback picture at about 5-times normal speed in both forward and reverse directions so that a particular point can be quickly located.

Program Operation

Using the MARK IN A and B buttons and the PROGRAMMED OPERATION selector, you can locate a particular point quickly or play a particular portion repeatedly.

- You can memorize only one point on each MARK IN A or B button. If the button is pressed several times, only the last point will be memorized.
- The PROGRAMMED OPERATION selection should be set to the OFF or $\overset{A}{\rightarrow\!|\!\leftarrow}$ when you memorize the point on the MARK IN A or B button.
- The memory of the MARK IN A and B buttons are cancelled when the RESET button is pressed and the "00:00" will be memorized on both buttons.
- When the programmed operation is finished, be sure to set the PROGRAMMED OPERATION selector to OFF.

To Locate a Particular Point

1 Press the MARK IN A button at the desired point.
2 Set the PROGRAMMED OPERATION selector to $\rightarrow\overset{A}{|}\leftarrow$.
3 Run the tape in the rewind or search mode.

The tape will stop at the point where the MARK IN A button was pressed. When the tape runs in the search mode, a still picture can be seen when the tape stops.

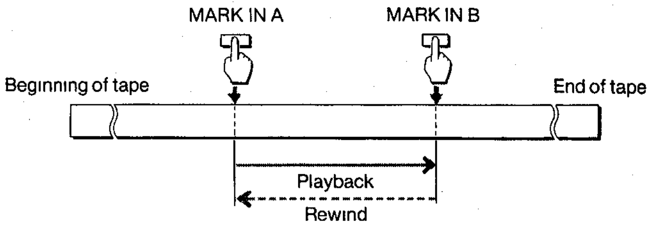
- If any point has not been memorized on the MARK IN A button, the tape stops at the point where the time counter indicates "00:00".

- When the REW button is pressed during playing the tape back, the point where the tape stops may slipped by about 3 seconds.

To Repeat a Particular Portion

1 Search for a point from where the playback is to begin, and press the MARK IN A button to memorize the point.
2 Search for a point where the playback is to stop, and press the MARK IN B button to memorize the point.
3 Set the PROGRAMMED OPERATION selector to $\circlearrowleft^{A}_{B}$
4 Press the REW button.
The part between the points memorized on the MARK IN A and B buttons are played back repeatedly.

To stop the playback, press the STOP button.

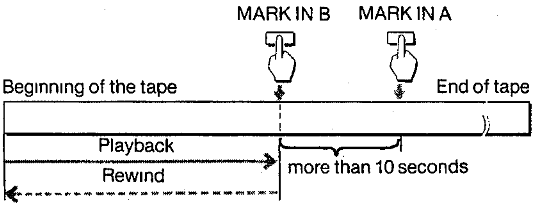


- The video signal or the CTL signal should be recorded for more than 5 second after the point which is memorized on the MARK IN B button.

To Repeat between the Beginning of the Tape and a Particular Point

1 Search for a point where the playback is to stop and memorize the point on the MARK IN B button.
2 Play the tape for more than 10 seconds from the memorized point, stop the tape and press the MARK IN A button.
3 Set the PROGRAMMED OPERATION selector to $\circlearrowleft^{A}_{B}$
4 Press the REW button.
The tape rewinds to the beginning of the tape, then the player plays back the designated portion on the tape repeatedly.

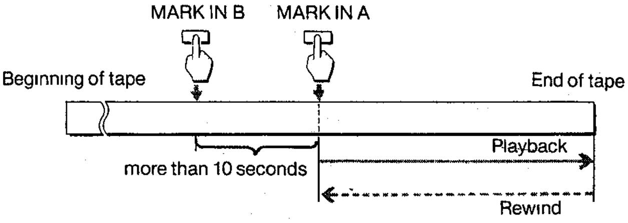
To stop the playback, press the STOP button.



To Repeat between a Particular Point and the End of the Tape

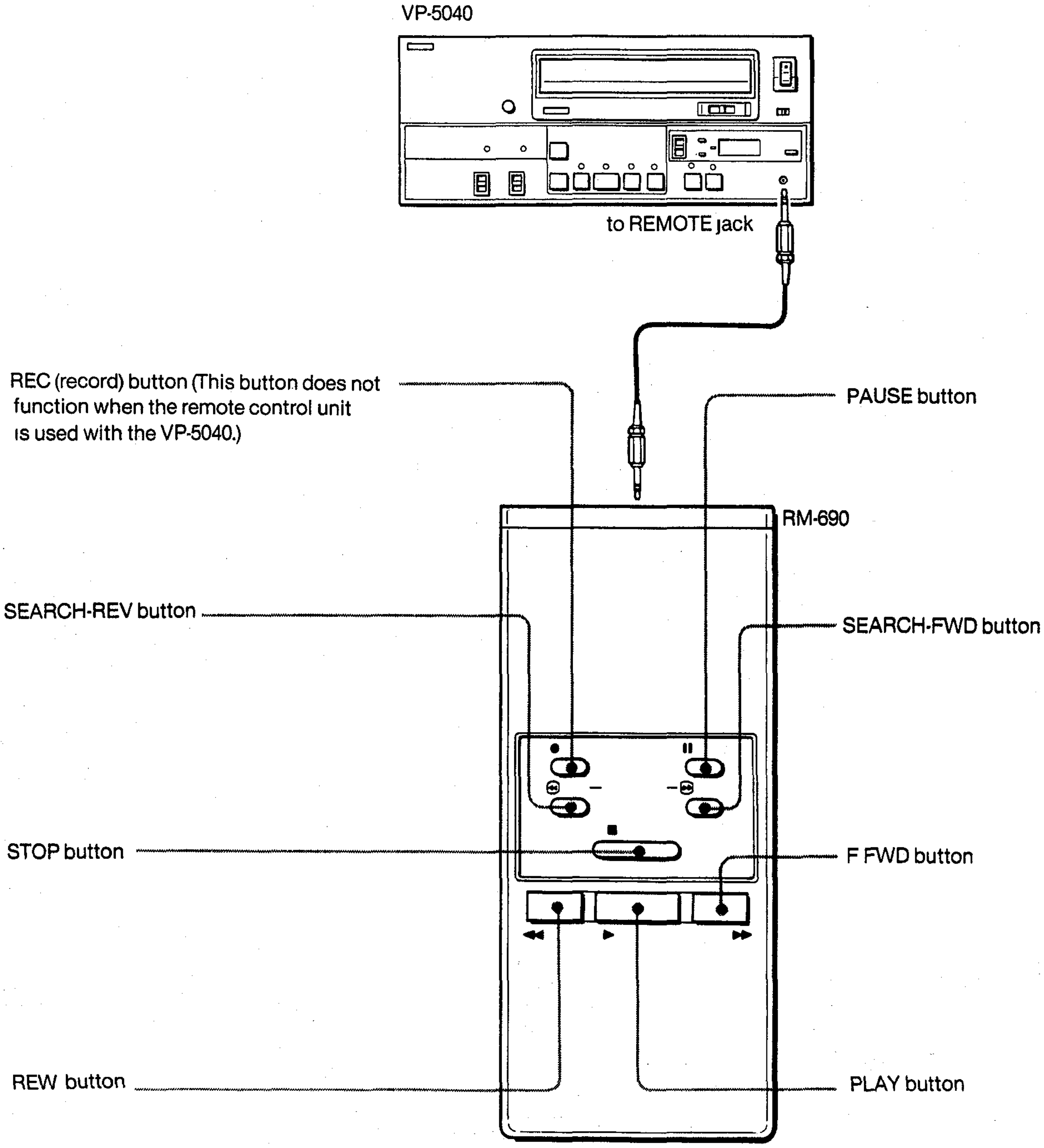
1 Search for a point from where the playback is to begin and press the MARK IN A button.
2 Rewind the tape more than 10 seconds by watching the time counter, stop the tape and press the MARK IN B button.
3 Set the PROGRAMMED OPERATION selector to $\circlearrowleft^{A}_{B}$
4 Play the tape.
The tape is played back to the end and rewinds to the point where the MARK IN A button was pressed, and the playback of the designated portion on the tape is repeated.

To stop the playback, press the STOP button.



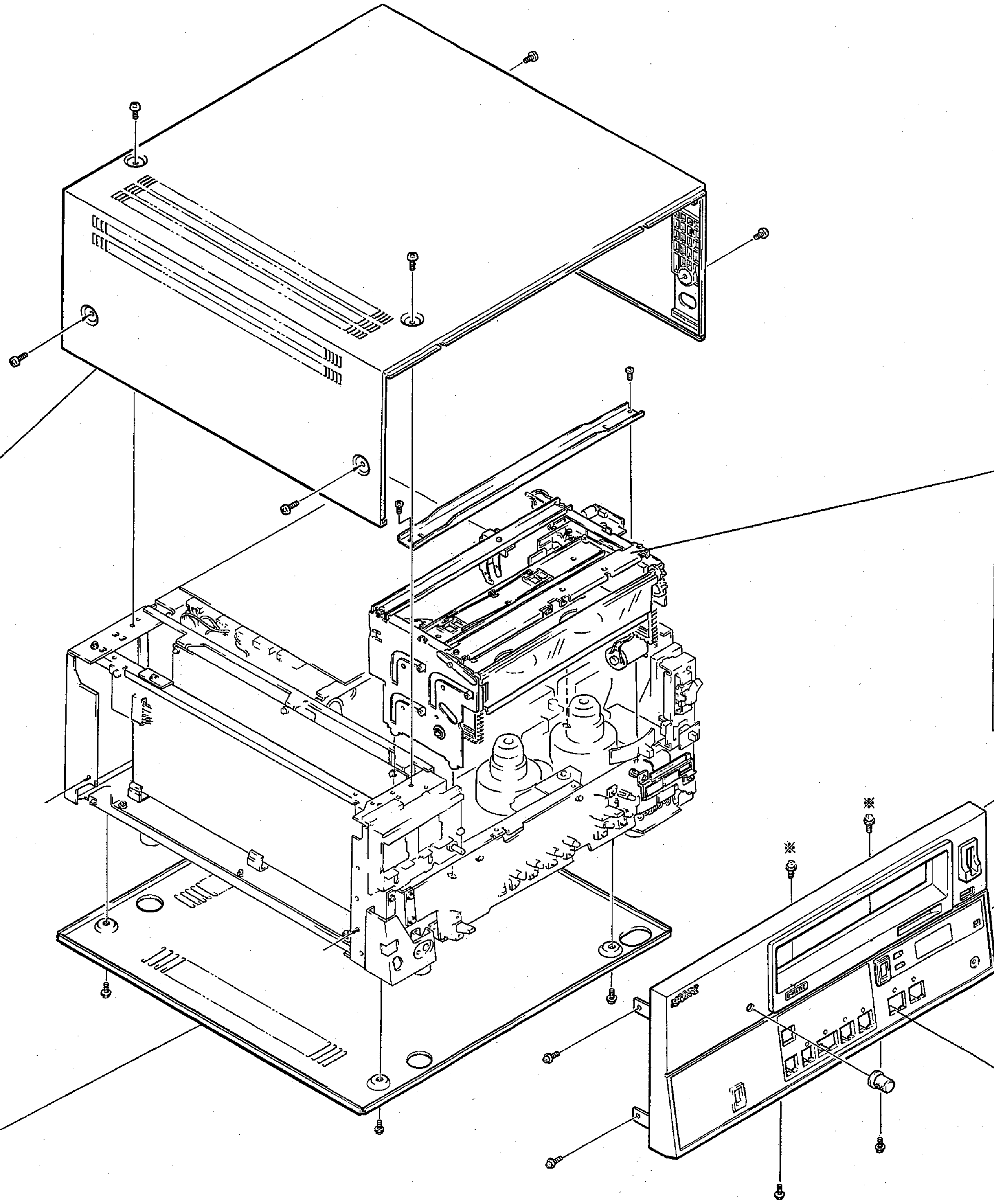
1-6. REMOTE CONTROL

The VP-5040 can be controlled by a remote control unit RM-690 (optional) connected to the REMOTE jack. The function of the buttons of the RM-690 is the same as that of the VP-5040.


VP-5040
to REMOTE jack
REC (record) button (This button does not function when the remote control unit is used with the VP-5040.)
PAUSE button
RM-690
SEARCH-REV button
SEARCH-FWD button
STOP button
F FWD button
REW button
PLAY button

SECTION 2
SERVICE INFORMATION

2-1. REMOVAL OF CABINET



. Upper Case

(1) Remove the six fixing screws as shown in the figure, remove the Upper Case from the unit.

. Cassette-up Compartment

(1) Remove the Upper Case.
(2) Remove the two fixing screws and remove the bracket.
(3) Disconnect the CN1 on the CC-22 Board.
(4) Bring up the Cassette-up Compartment Block slowly.
(5) When installing the Cassette-up Compartment, insert the projections of the Cassette-up Compartment Block to the holes of chassis.
(6) Insert the projections of the Cassette-up Compartment Block to the holes of the bracket as shown in the figure and screw it.

. Lower Case

(1) Remove the four fixing screws, remove the Lower Case from the unit.

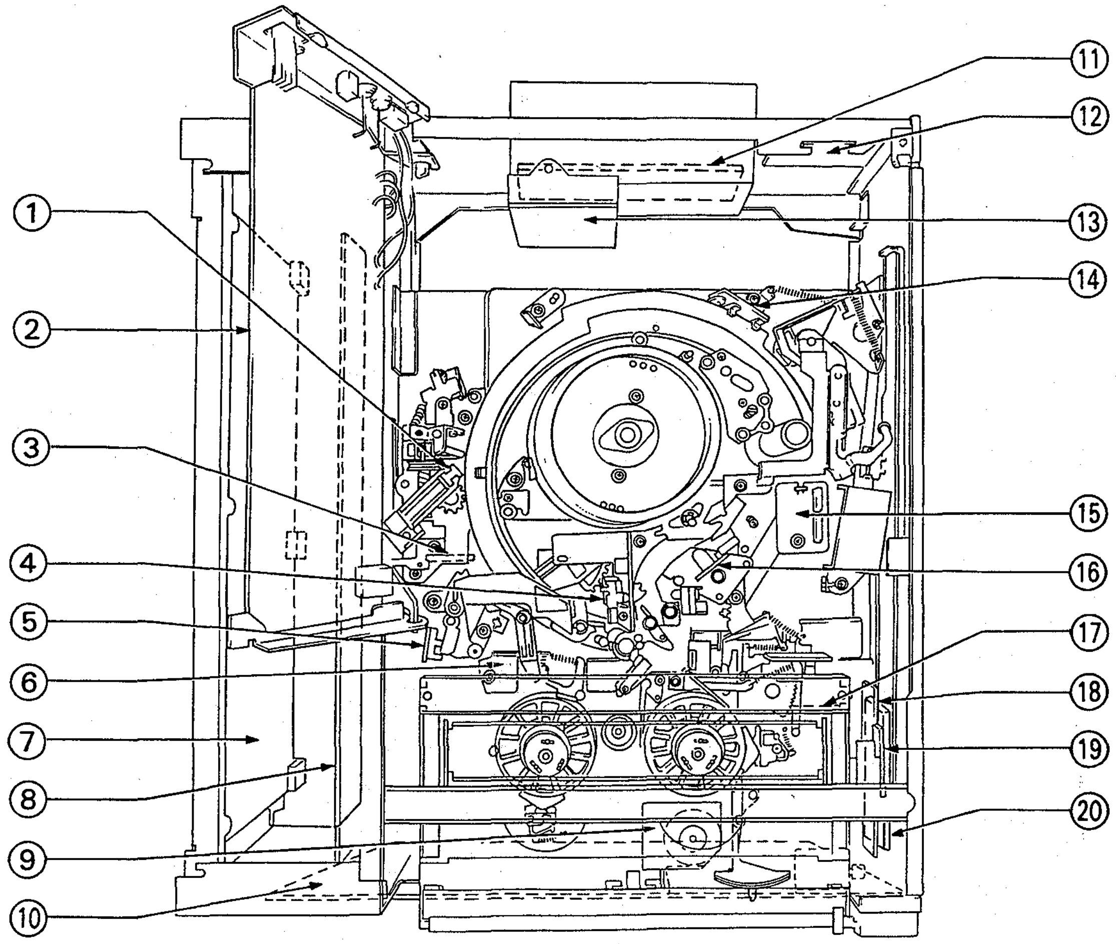
. Front Panel

(1) Remove the Upper Case.
(2) Remove the six fixing screws (each two screws on the left and right sides, and bottom).
(3) Loosen the ※ marked two fixing screws as shown in the figure, remove the Front Panel from the unit.

2-2. MAIN PARTS LOCATION

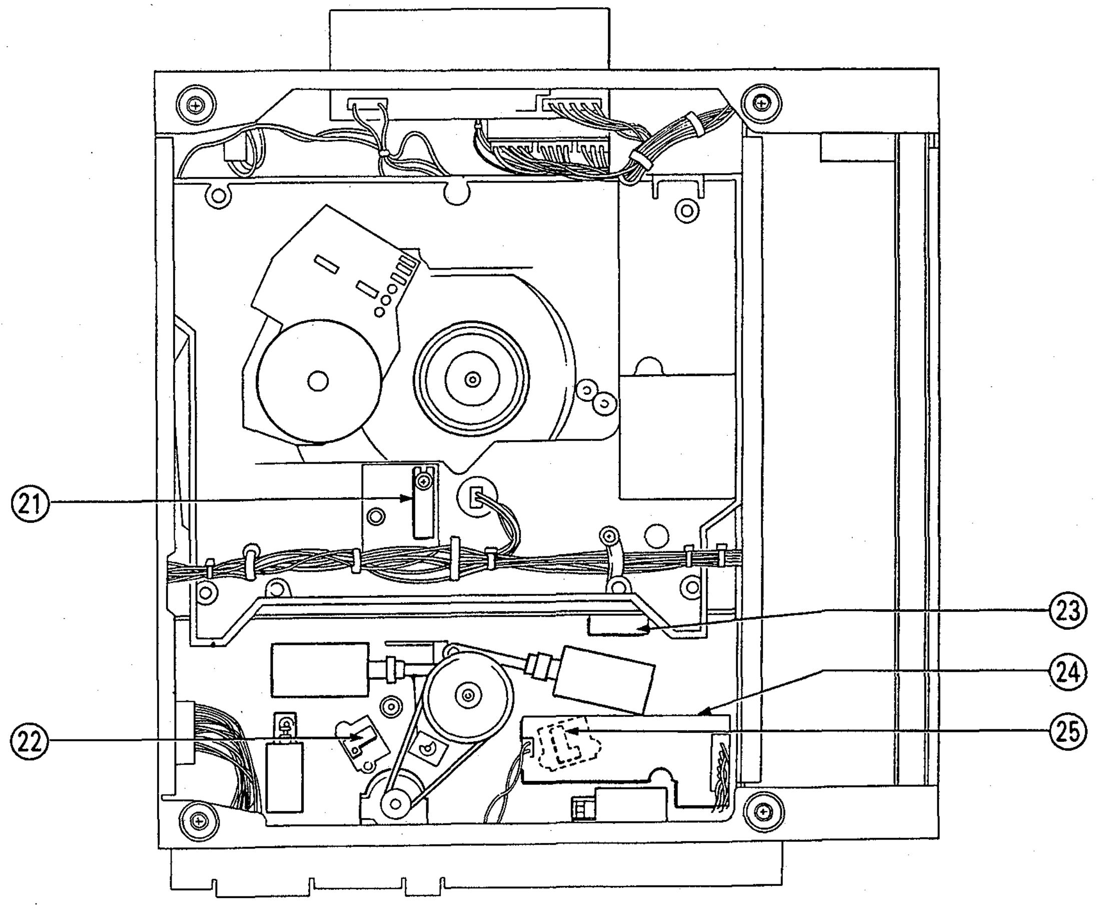
2-2-1. Location of the Printed Circuit Board

<TOP VIEW>



1	PH-5 Board
2	VA-35B Board
3	LM-13 Board
4	PH-5 Board
5	SW-50 Board
6	SE-46 Board
7	SV-74B Board
8	SY-51 Board
9	RM-39 Board
10	KY-91B Board
11	UR-14E
12	AC-65B Board
13	DC-24B Board
14	PTC-17 Board
15	AH-11 Board
16	EC-23 Board
17	CC-23 Board
18	CC-22 Board
19	CC-24 Board
20	PD-29 Board

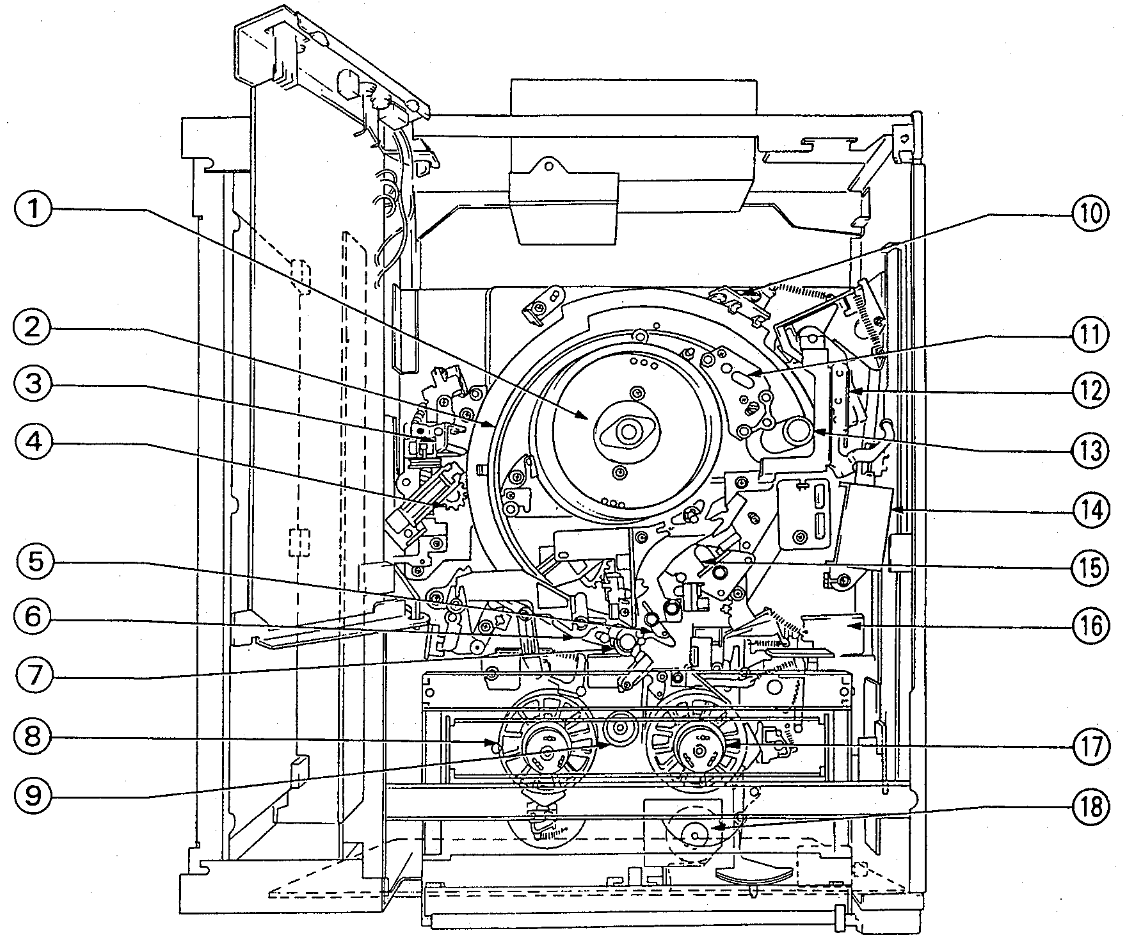
<BOTTOM VIEW>



21	PT-9 Board
22	PTC-16 Board
23	TG-22 Board
24	PD-30 Board
25	PTC-16 Board

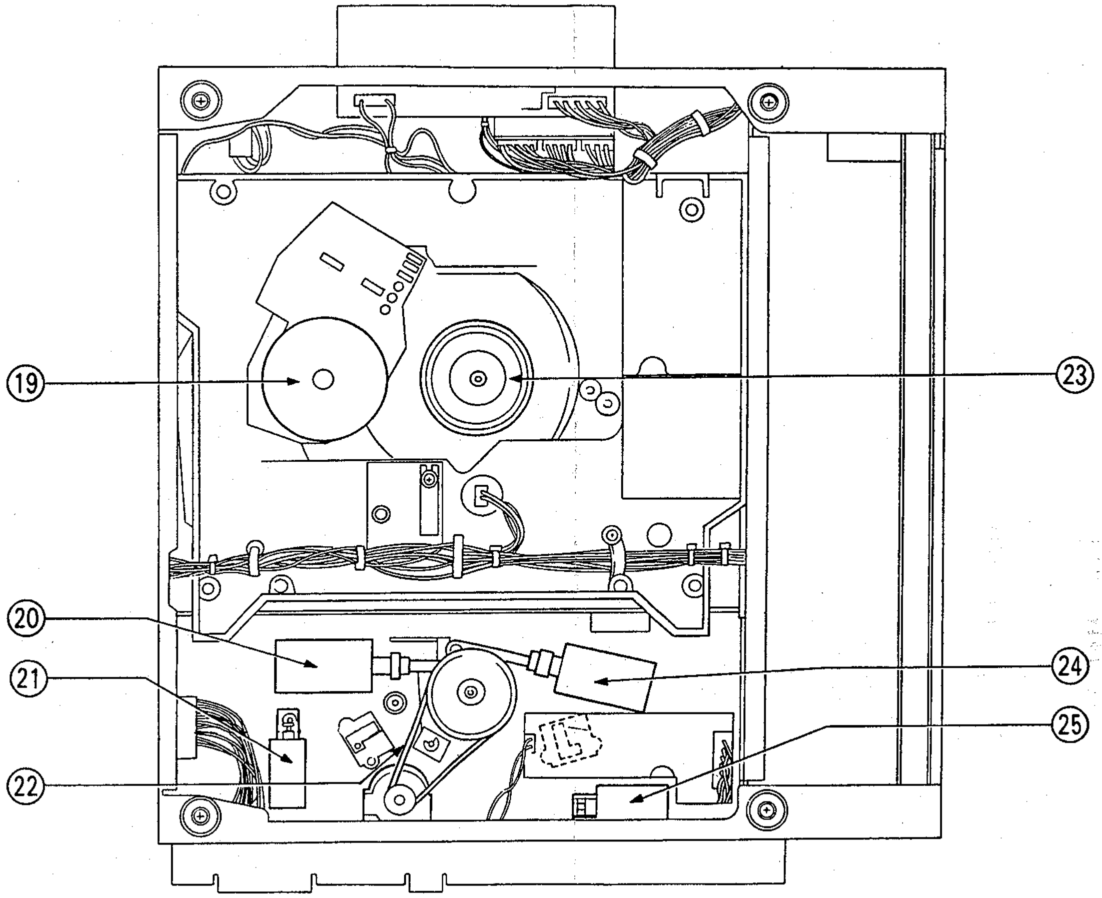
2-2-2. Location of the Mechanical Main Parts/Components

<TOP VIEW>



1	Head drum	11	Audio/CTL head
2	Threading ring	12	Pinch lever
3	T correction guide	13	Capstan shaft
4	Gear box	14	Pinch solenoid
5	S drawer arm	15	CTL PB head
6	T drawer arm	16	Search solenoid
7	Pinch roller	17	Supply reel table
8	Take-up reel table	18	Reel motor
9	FF/REW idler		
10	FR detector		

<BOTTOM VIEW>



19	Capstan motor
20	Supply idler solenoid
21	Supply brake solenoid
22	Belt for FF/REW idler
23	Drum motor
24	Take-up idler solenoid
25	Take-up brake solenoid

2-3. PRINTED CIRCUIT BOARD

The circuit information is provided below.

SYSTEM	BOARD	CIRCUIT FUNCTION
VIDEO	VA-35B	Video Demodulator
AUDIO	AH-11	Audio PB Head
	VA-35B	Audio PB Amplifier
SERVO	AH-11	CTL PB Head
	EC-23	FR CTL PB Head
	PT-9	Reel Motor Driver
	SV-74B	Drum / Capstan Servo
POWER	AC-65B	AC Input
	DC-24B	DC Supply / Fuse
	UR-14E	Switching Regulator
KEY	KY-91B	Function Key / Display
SYSTEM CONTROL	PD-29	Pinch, S-idler, S-brake, Search, Skew Solenoid
	PD-30	T-idler, T-brake Solenoid
	PH-5	Tape Beginning / End Detector
	SY-51	System Control
OTHERS	CC-22	Cassette Compartment Switch / Motor
	CC-23	
	CC-24	
	LM-13	Threading Motor
	PTC-16	S-reel Rotation Detector T-reel Rotation Detector
	PTC-17	Threading Ring Detector
	RM-39	Reel Motor
	SE-46	Tension Regulator
	SW-50	FR Unthread End Detector
	TG-22	Tension Regulator LED

2-4. CONNECTION CONNECTOR

When external cables are connected to the various connectors on the connector panel during the maintenance, hardware (as stated below) or equivalents must be used.

Panel indication	Connection connector
VIDEO OUT	1-560-069-11 PLUG, BNC, MALE
RF OUT	1-506-305-00 PLUG, F
MONITOR	1-506-161-00 CONNECTOR, 8P, MALE

2-5. OUTPUT SIGNAL OF THE CONNECTOR

OUTPUT

VIDEO OUT : 1.0 ± 0.2 Vp-p,
75 ohms, unbalanced,
sync negative

AUDIO LINE OUT CH-1, CH-2
: -0.5 dB (47-kohm load)

AUDIO MONITOR : -0.5 dB (47-kohm load)

2-6. SPARE PARTS

(1) The shaded and ⚠ -marked components are critical to safety.
Replace only with same components as specified.

(2) Replacement parts supplied from the Sony Parts Center will sometimes have different shape and outside view from the parts which actually is in use. This is due to "accommodating the improved parts and/or engineering changes" or "standardization of genuine parts".

- This manual's exploded views and electrical spare parts lists are indicating the part numbers of "the standardized genuine parts at present".
- Regarding engineering part changes in our engineering department, refer to Sony service bulletins and service manual supplements.

(3) The parts marked with "s" in the SP column of the exploded views and electrical spare parts lists are normally stocked for replacement purposes. The parts marked with "o" in the SP column are not normally required for routine service work. Orders for parts marked with "o" will be processed, but allow for additional delivery time.

2-7. SELECT SWITCH SETTING

Along with the select switches on the control panel and the connector panel, the switch listed below is on the SY-51 Board. This switch must be set according to operating conditions.

. SY-51 Board

SW1 : SELF DIAGNOSTIC Switch
ON : SELF DIAGNOSTIC mode
OFF : NORMAL mode
When the set is shipped, this switch is set to the OFF position.

2-8. HOW TO OPERATE THE MACHINE WITHOUT INSTALLING CASSETTE TAPE

(1) Remove the Cassette-up Compartment. (Refer to Section 2-1.)
(Tape beginning sensor and tape end sensor are disabled according to disconnect the connector of Cassette-up Compartment.)

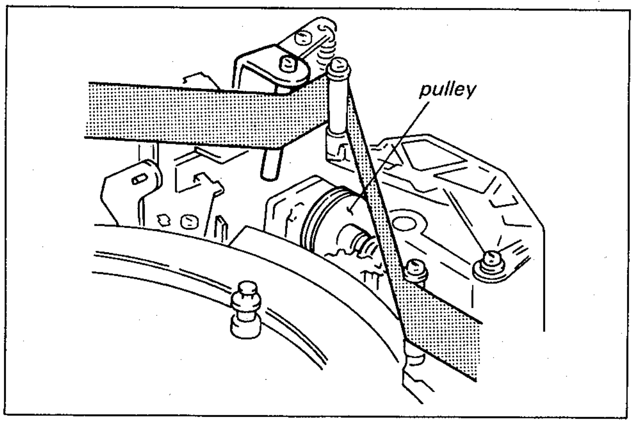
(2) Turn the power ON. (The machine is put into the FR-STOP mode automatically.)

(3) The machine can be placed into the desired mode by pressing the function button to corresponding to the mode.

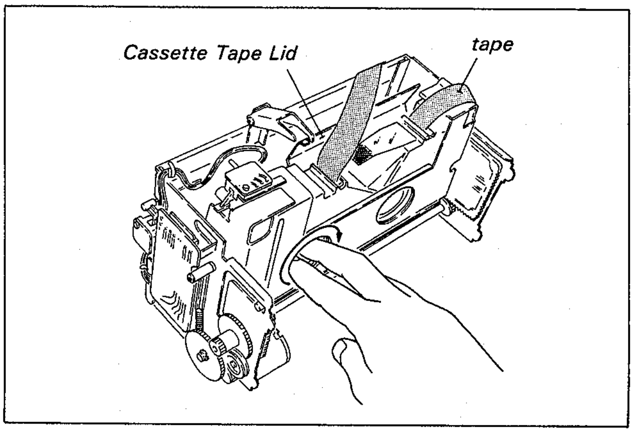
2-9. CASSETTE REMOVAL PROCEDURE WHEN NORMAL EJECTION IS NOT POSSIBLE

If the EJECT operation becomes impossible due to trouble or the Cassette-up Compartment does not rise when the EJECT operation takes place, the cassette tape can be removed from the set by the procedures described below.

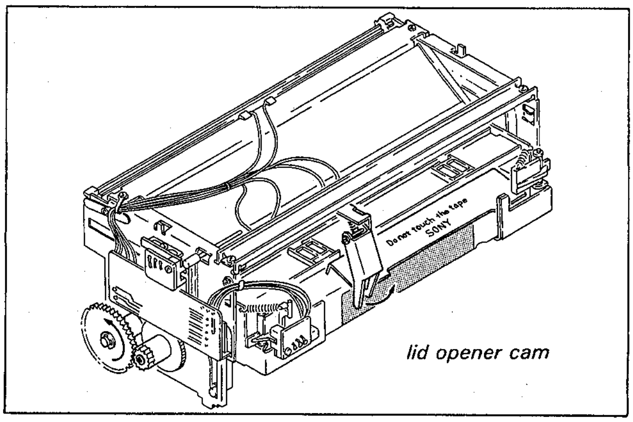
(1) Turn the power OFF.
(2) Remove the Upper Case.
(Refer to Section 2-1.)
(3) Turn the white colored pulley of the Gear Box in the clockwise direction by hand until the Threading Ring placed into the FR-STOP position. (The Threading Ring moves in the unthreading direction. But the tape remains at the position of threading completion.)



(4) Disconnect the connector CN1 on the CC-22 Board of the Cassette-up Compartment.
(5) Remove the bracket. (Refer to Section 2-1.)
(6) Bring up the Cassette-up Compartment with the cassette tape in it slowly. Remove the tape remaining in the set carefully so that it does not damage.
(7) Hold the Cassette Tape Lid so that it does not close. Wind the tape into the cassette tape by turning the reel hub on the back of the cassette tape by hand.



(8) Raise the cam for opening the lid and close the cassette tape lid.



(9) Remove the tape from the Cassette-up Compartment.
(10) Turn the gear on the right side of the Cassette-up Compartment counterclockwise direction by hand in order to place the Cassette-up Compartment into the up state.
(11) Locate the cause of the trouble and remedy the problem.

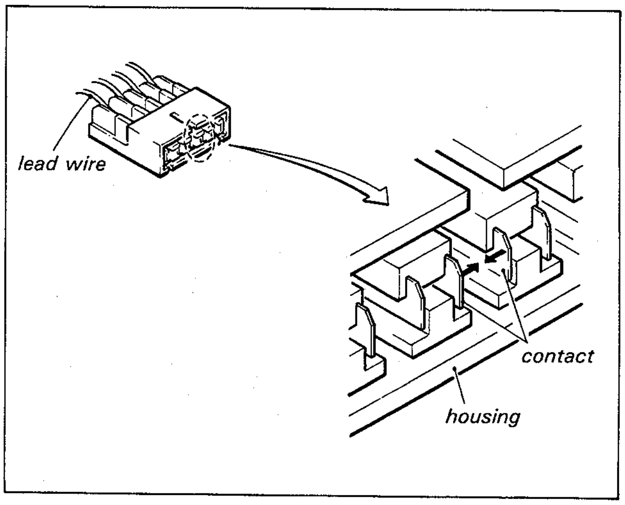
2-10. REPLACEMENT PROCEDURE OF CONTACT FOR THE BOARD CONNECTOR

The connector for the printed circuit board is composed of the receptacle and plug. And the plug is composed of the contact and housing.

The housing hold the contact connected the harness. Replacement procedure for the contact are as follows;

Replacement procedure:

1. Bend the claws of the contact in the direction of the arrows so that disengage the lock.
2. Pull the lead wire connected to the contact.
3. Replace the contact with a new one.
4. Install the contact into the housing.



2-11. DIAGNOSTIC FUNCTION IN SYSTEM CONTROLLER

2-11-1. Outline of Self Diagnostic

The VP-5040 has a self diagnostic function of the system control circuit which determines if the source of the problem is in the microcomputer itself or not.

The system control function is classified into mechanical and electrical operation controls. Mechanical operation control defects are efficiently analyzed using the self diagnostic function.

The VP-5040 employs five one-chip microcomputers, two of which are used to system control of the VTR. The diagnostic function enables the input and output data of the two microcomputers to be latched using another microcomputer for display and the diagnostic result to be displayed on LEDs on the front panel. The microcomputer operation is determined by each input signal, and the malfunctions can be detected by checking the input and output signals.

2-11-2. Diagnosis Method

When switch SW1 on the SY-51 Board is set to ON, the self diagnostic function is activated. For the diagnostic result display, the input and output data of the microcomputer's I/O port is displayed four bits at a time for each test address, as shown on pages 2-12 through 2-14.

When the RESET button is pressed, the test address is displayed. When the MARK A button is pressed while the RESET button is pressed, the low order digit of the test address is changed as shown below.

→ 0 → 1 → 2 →⋯ → 9 → L → H → P → R → -(minus) → (blank) ┐

When the MARK B button is pressed while the RESET button is pressed, the high order digit of the test address is changed as shown below.

→ 0 → 1 → 2 ┐

Twenty six test addresses are available in hexadecimal notation. Therefore, when the RESET, MARK A, and MARK B buttons are pressed, any test address data (digits 1 through 4) shown in the table on pages 2-12 through 2-14 can be displayed on the front panel LEDs. For the LED display, logic "H" or "L" is displayed by "1" or "0" and changed depending on the VTR operating condition.

For example: To observe an H:DRUM STOP signal in test address "01", the following operation is performed.

Operation	LED display CTL display	Remarks
	↓	
Turn SW1 on the SY-51 Board ON.	1100	Enters the diagnosis mode
	↓	
Press the RESET button.	00	Test address = 00
	↓	
Press the MARK A button one time while pressing the RESET button.	01	Test address = 01
	↓	
Release the RESET button.	1111	Data in test address 01
	↑	
	H:DRUM STOP signal	

If the head drum is stopped, the leftmost digit displays "H" ("1"). When a cassette tape is inserted into the VTR and the PLAY mode is entered, display "1" is changed to "0" (rotation command).

The input and output signals of the microcomputer in each mode are shown in the timing chart on pages 2-17 through 2-32. If an input signal is properly sent to the microcomputer in each mode, the microcomputer sends an output signal shown in the timing chart.

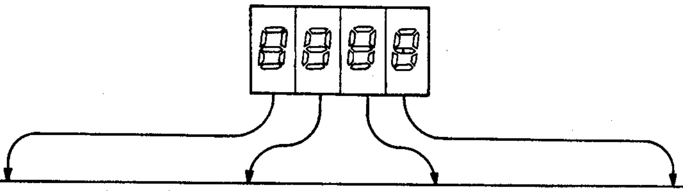
2-11-3. Troubleshooting

The troubleshooting employing the diagnosis function is described here.

The mode conversion diagram of mechanical operation is shown on page 2-15. With reference to this diagram, check where the present trouble occurs during mode conversion, or where malfunctions are found during mechanism (e.g., motor or solenoid) operation. When the mode in which the trouble occurs is detected, refer to the timing chart described in the mode conversion diagram. The timing chart shows the input and output signals of the microcomputer in each mode. Therefore, when the motor or solenoid is abnormal, observe the output signal line using an LED to check whether it is changed as shown in the timing chart. When the output signal from the microcomputer is normal, check the signal input to the microcomputer. If the signal line is not changed as shown in the timing chart, refer to the schematic diagram for trouble location. The timing chart describes an input/output signal name, signal display test address and digit, and microcomputer pin name through which a signal is input and output.

For example, the H:DRUM STOP signal is displayed in the leftmost digit (digit 1) when the test address is "01". Whether the input and output signals are changed as shown in the timing chart is thus checked with the actual VTR operation.

2-11-4. Diagnosis List



TEST ADDRESS	DATA DISPLAYED				INPUT/OUTPUT PORT NAME ON THE MICRO PROCESSOR	
	DIGIT 1	DIGIT 2	DIGIT 3	DIGIT 4		
00	CAPSTAN CMD FWD/$\overline{\text{REV}}$ (1=FWD CMD O=REV CMD	NORMAL/$\overline{\text{SEARCH}}$ (1=NORMAL O=SEARCH MODE	O	O	E1	OUT/IC7 on SY-51
01	H : DRUM STOP CMD (1=DRUM STOP O=DRUM ROTATE	1	1	1	E2	OUT/IC7 on SY-51
02	CTL COUNT UP/$\overline{\text{DOWN}}$ (1=COUNT UP O=COUNT DOWN	1	1	1	E3	OUT/IC7 on SY-51
03	H : REEL REV 1=SEARCH REV MODE	H : REEL FWD 1=PLAY or SEARCH FWD MODE	H : REEL STILL 1=PLAY PAUSE or SEARCH PAUSE	H : REEL STOP 1=STOP MODE	P	OUT/IC7 on SY-51
04	H : REEL FF/REW (1=FF or REW MODE O=other mode	L : SEARCH SOL.ON (1=OFF O=ON	L : PINCH SOL.ON (1=OFF O=ON	1	O	OUT/IC7 on SY-51
05	L : T-BRAKE SOL.ON (1=OFF O=ON	L : S-BRAKE SOL.ON (1=OFF O=ON	L : T-IDLER SOL.ON (1=OFF O=ON	L : S-IDLER SOL.ON (1=OFF O=ON	EO	OUT/IC7 on SY-51
06	← SEARCH SPEED DATA (NOTE 1) →				R2	OUT/IC7 on SY-51
07	L : CASSETTE COMPARTMENT UP CMD O=UP	L : CASSETTE COMPARTMENT DOWN CMD O=DOWN	L : THREAD MOTOR ON O=THREAD	L : UNTHREAD MOTOR ON O=UNTHREAD	R3	OUT/IC7 on SY-51
08	O	L : FR-UNTHREAD POSITION	H : CASSETTE DOWN 1=DOWN ← (NOTE 2) →	H : CASSETTE IN 1=INSERTED	K	IN/IC7 on SY-51
09	H : DRUM STOP (1=STOP O=ROTATE	H : REEL STOP (1=STOP O=ROTATE	H : T-IDLER ON (1=ON O=OFF	H : T-REEL STOP (1=STOP O=ROTATE		
OL	L : CAPSTAN STOP (1=ROTATE O=STOP	CAPSTAN FWD/$\overline{\text{REV}}$ (1=FWD O=REV	UNTHREAD END ← (NOTE 3) →	THREAD END	R1	IN/IC7 on SY-51
OH	O	O	PAUSE SELECT-1 O ← (NOTE 4) →	PAUSE SELECT- O 1	E4	IN/IC7 on SY-51
OP	L : DRUM ROTATE (1=STOP O=ROTATE	L : CASSETTE CONNECT O	L : SLACK DET : OFF (NOTE 5)	O	E5	IN/IC7 on SY-51
OR	← RING SLACK ERROR MASSAGE (NOTE 6) → The condition of VP-5040 is detected by IC7/SY-51 board when the ring slack occurs. RING SLACK means does not rotate the threading ring.					
O-	O	O	O	O		
O (Blank)	O	O	O	O		

10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	REMOTE CONTROL CODE FROM RM-690 (NOTE 8)			
19	1	1	1	1
1L	1	1	1	1
1H	1	1	1	1
1P	1	1	1	1
1R	1	1	1	1
1-	1	1	1	1
1 (Blank)	1	1	1	1
20	REEL SLACK ERROR MASSAGE (NOTE 7) The condition of VP-5040 is detected by IC12/SY-51 board When the reel slack occurs. REEL SLACK means does not rotate the reel motor.			
21	0	0	0	0
22	0	0	0	0
23	0	0	L : VIDEO MUTE 1=VIDEO is OUTPUT 0=VIDEO is MUTED	H : AUDIO MUTE 1=AUDIO is MUTE 0=AUDIO is OUTPUT
24	1	0	0	0
25	0	0	0	0
26	0	0	0	0

NOTE 1 SEARCH SPEED DATA

DATA DISPLAYED	TAPE SPEED
0 0 0 0	NOISE LESS STILL
0 1 0 1	x 1
0 1 1 1	x 5
1 0 0 1	STILL

NOTE 2 CASSETTE IN/CASSETTE DOWN

H:CASSETTE IN	H:CASSETTE DOWN	CASSETTE POSITION
0	0	During CASSETTE-IN
0	1	CASSETTE-UP completely
1	0	During CASSETTE-DOWN
1	1	CASSETTE-DOWN completely

NOTE 3 THREAD END/UNTHREAD END

UNTHREAD END	THREAD END	THREADING RING POSITION
1	1	Between CASSETTE-IN and FR-STOP
0	1	THREAD END position
0	0	Between FR-STOP and THREAD END
1	0	FR-STOP position

NOTE 4 PAUSE SELECT-1/PAUSE SELECT-0

PAUSE SELECT-1	PAUSE SELECT-0	PAUSE TIMER
0	1	8 min
1	1	1 min
1	0	10 sec
0	0	2 sec

NOTE 5 SLACK DETECT

- While shorting between TP 3 and GND(E1) on The SY-51 board, SLACK Detector does not operate.
  Normal state is "H."

NOTE 8 REMOTE CONTROL CODE

COMMAND	CODE	COMMAND	CODE
STOP	1 0 0 0	FWD SEARCH	0 1 1 0
FF	1 1 0 0	REV SEARCH	0 1 1 1
REW	1 0 1 1	PAUSE	1 0 0 1
PLAY	1 0 1 0	REC	1 1 1 0

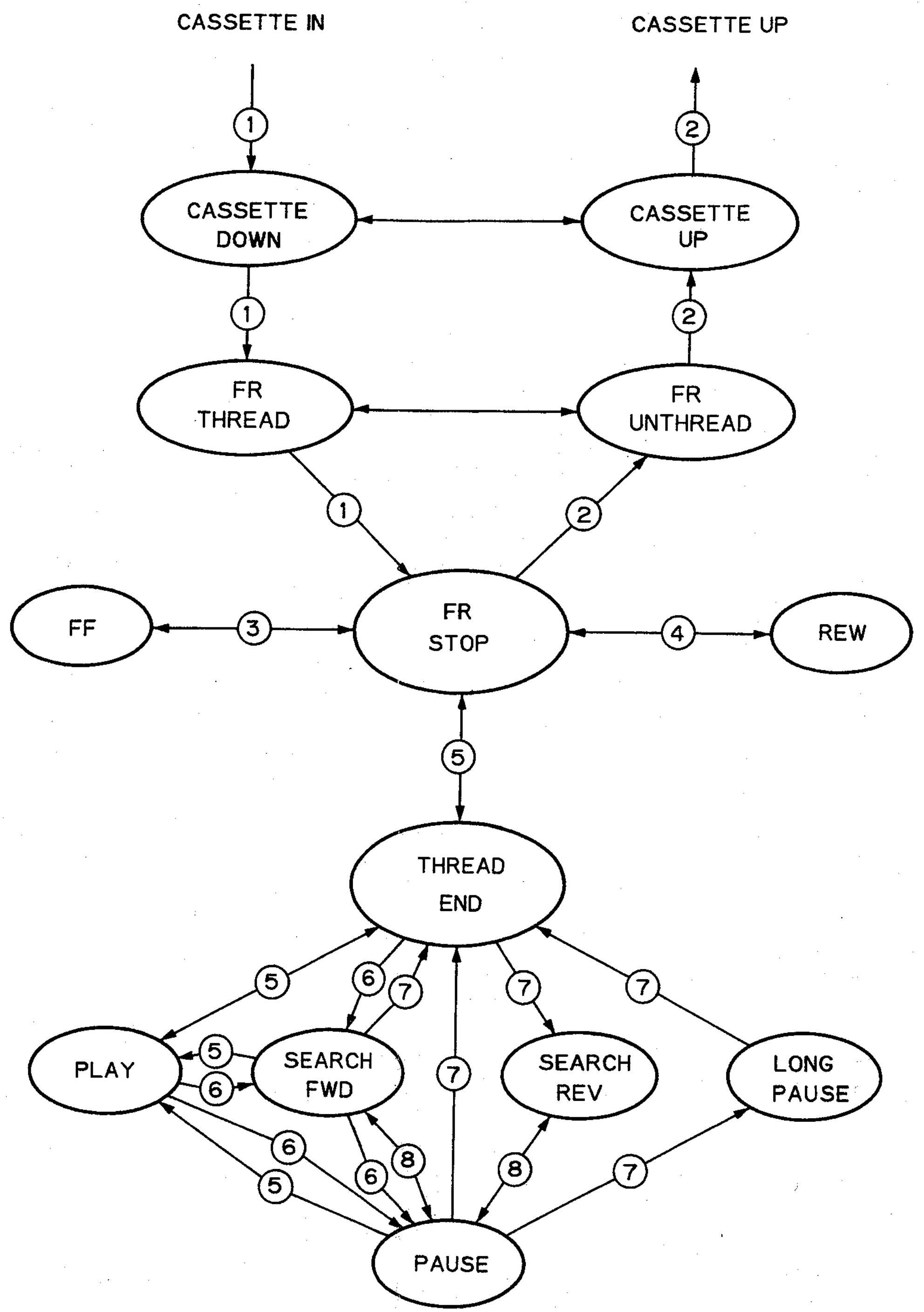
NOTE 6 RING SLACK ERROR MASSAGE

DATA DISPLAYED	CONDITION
0 0 0 0	RING SLACK does not occur
0 0 0 1	CASSETTE DOWN → FR-STOP
0 0 1 0	FR-STOP → THREAD END
0 0 1 1	THREAD END → FR-STOP
0 1 0 0	FR-STOP → CASSETTE DOWN
0 1 0 1	FR-STOP → CASSE

NOTE 7 REEL SLACK ERROR MASSAGE

DATA DISPLAYED	CONDITION
0 0 0 0	REEL SLACK does not occur
0 1 1 0	FF or REW mode
0 1 1 1	FR-STOP → FR UNTHREAD
1 0 0 0	x1 NORMAL SPEED or less
1 0 0 1	Hiqber than x1 NORMAL SPEED
1 0 1 0	THREAD END → FR-STOP

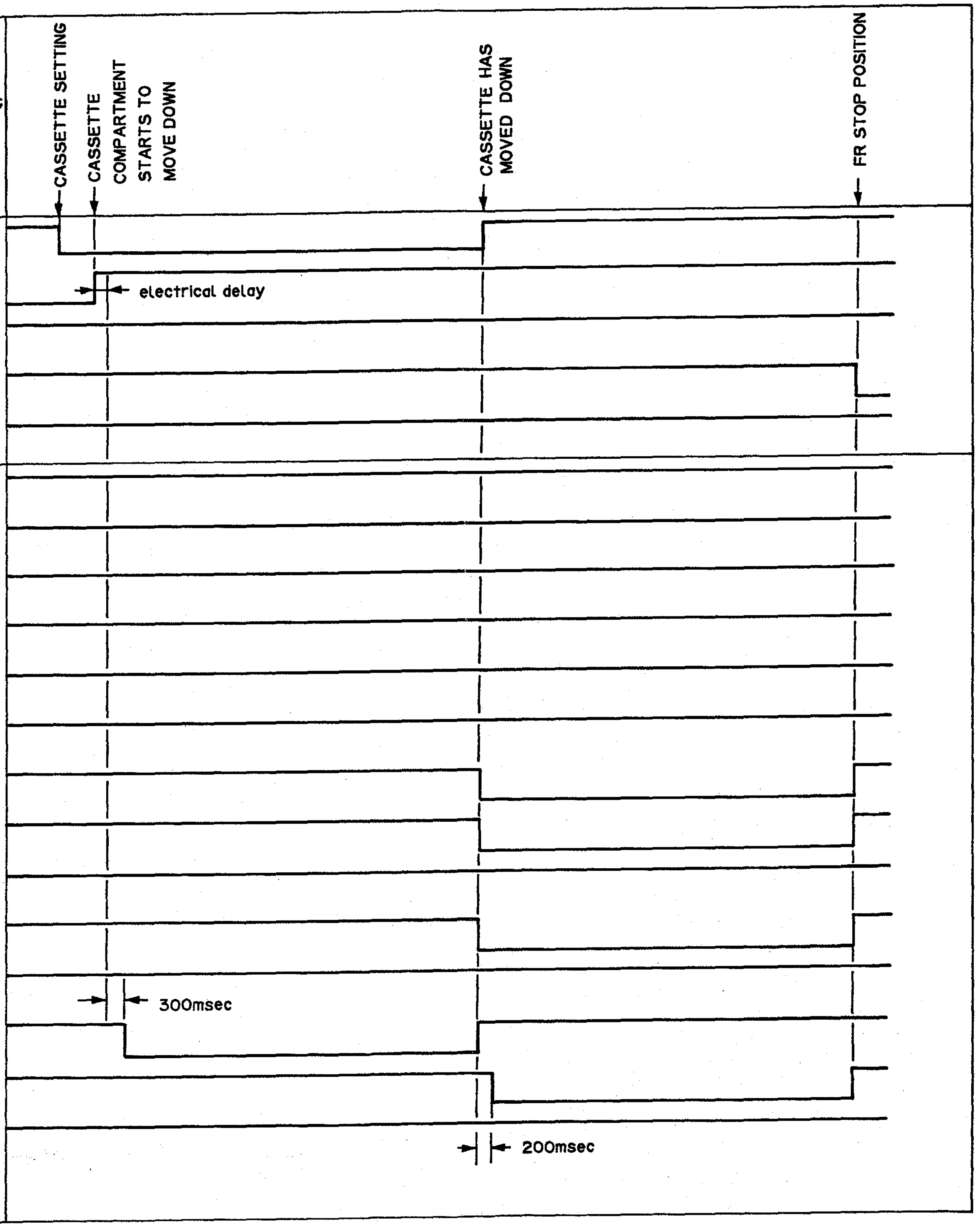
2-11-5. Mode Conversion Diagram and Timing Chart


CASSETTE IN
CASSETTE UP
①
②
CASSETTE DOWN
CASSETTE UP
①
②
FR THREAD
FR UNTHREAD
①
②
FF
③
FR STOP
④
REW
⑤
THREAD END
⑤
⑥
⑦
⑦
⑦
⑦
PLAY
⑤
⑥
SEARCH FWD
SEARCH REV
LONG PAUSE
⑥
⑤
⑥
⑧
⑧
⑦
PAUSE

NOTE: Number in the Figure means title number of Timing chart (page 2-17 through 2-32).

1. THREADING OPERATION (CASSETTE IN→CASSETTE DOWN→FR STOP POSITION)

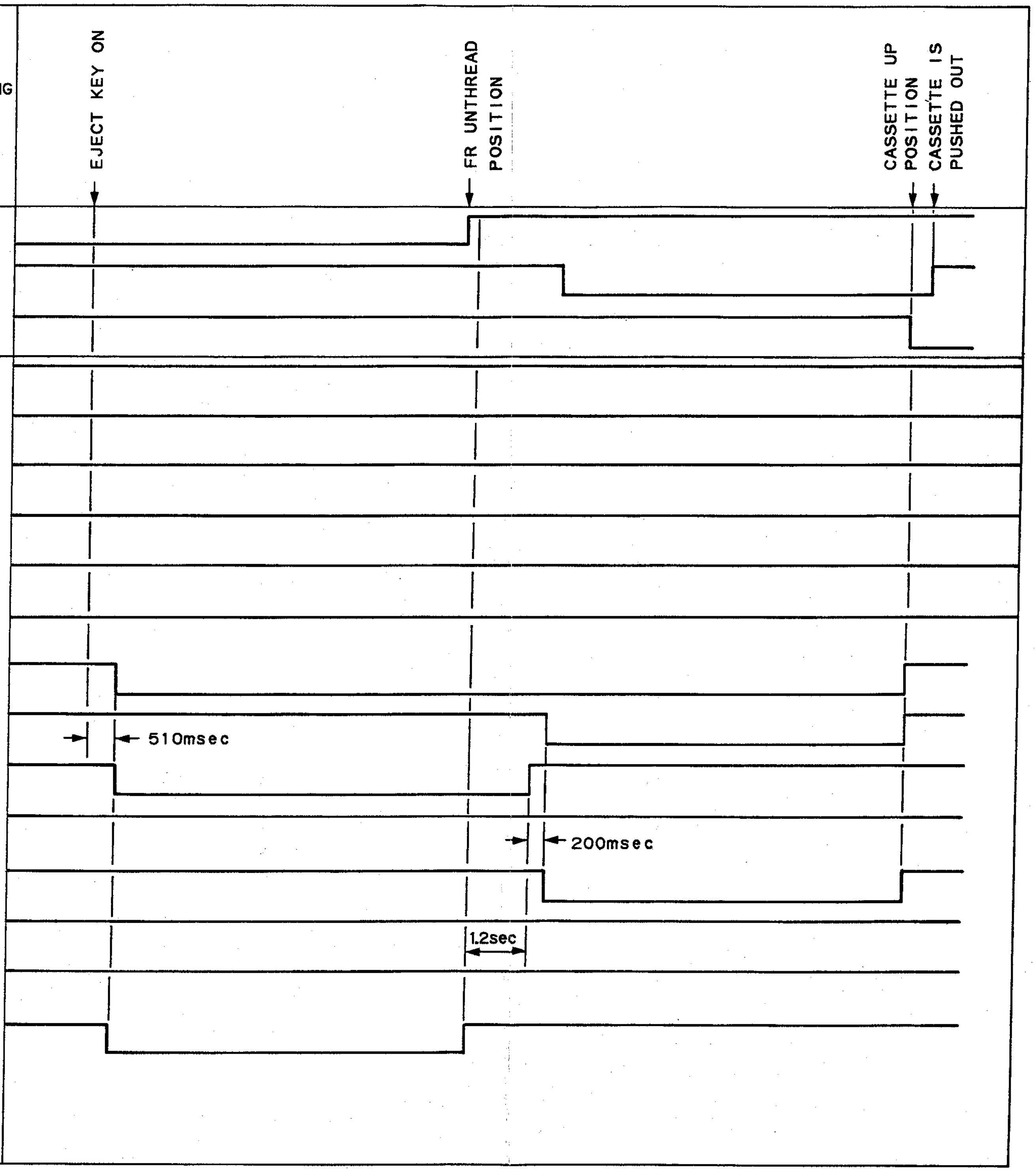
	SIGNAL	LABEL NUMBER ON DIAGNOSTICS	MEASURING POINT
INPUT	H : CASSETTE DOWN	08 — DIGIT 3	IC7-18
	H : CASSETTE IN	08 — DIGIT 4	IC7-17
	L : THREAD END	OL — DIGIT 3	IC7-5
	L : UNTHREAD END	OL — DIGIT 4	IC7-6
	L : DEW DET	14 — DIGIT 3	(IC1-35 KY-91B)
OUTPUT	FWD / $\overline{\text{REV}}$	00 — DIGIT 1	IC7-41
	NORMAL / $\overline{\text{SEARCH}}$	00 — DIGIT 2	IC7-40
	H : DRUM STOP	01 — DIGIT 1	IC7-45
	L : SKEW SOL.ON	02 — DIGIT 2	IC7-48
	L : SEARCH SOL.ON	04 — DIGIT 2	IC7-23
	L : PINCH SOL.ON	04 — DIGIT 3	IC7-22
	L : T-BRAKE SOL.ON	05 — DIGIT 1	IC7-37
	L : S-BRAKE SOL.ON	05 — DIGIT 2	IC7-36
	L : T-IDLER SOL.ON	05 — DIGIT 3	IC7-35
	L : S-IDLER SOL.ON	05 — DIGIT 4	IC7-34
	L : C.C. UP	07 — DIGIT 1	IC7-16
	L : C.C. DOWN	07 — DIGIT 2	IC7-15
	L : THREAD MOTOR ON	07 — DIGIT 3	IC7-13
	L : UNTHREAD MOTOR ON	07 — DIGIT 4	IC7-14
			ON SY-51 BOARD


CASSETTE SETTING
CASSETTE COMPARTMENT STARTS TO MOVE DOWN
CASSETTE HAS MOVED DOWN
FR STOP POSITION
electrical delay
300msec
200msec

C.C. = CASSETTE UP COMPARTMENT

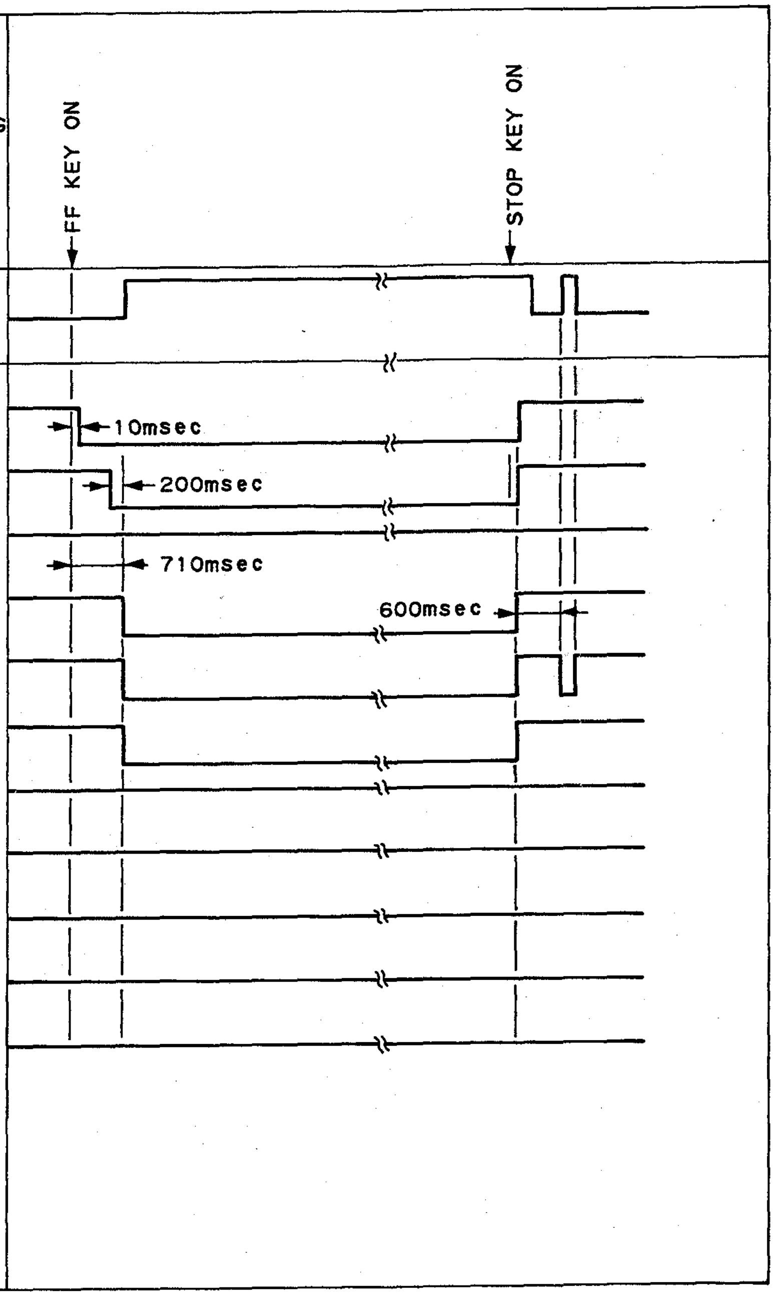
2. UNTHREADING OPERATION (FR STOP POSITION → FR UNTHREAD END POSITION → CASSETTE UP)

	SIGNAL	LABEL NUMBER ON DIAGNOSTICS	MEASURING POINT
INPUT	L : FR UNTHREAD END	08 — DIGIT 2	IC7-19
	H : CASSETTE DOWN	08 — DIGIT 3	IC7-18
	H : CASSETTE IN	08 — DIGIT 4	IC7-17
OUTPUT	FWD / $\overline{\text{REV}}$	00 — DIGIT 1	IC7-41
	NORMAL / $\overline{\text{SEARCH}}$	00 — DIGIT 2	IC7-40
	H : DRUM STOP	01 — DIGIT 1	IC7-45
	L : SKEW SOL.ON	02 — DIGIT 2	IC7-48
	L : SEARCH SOL.ON	04 — DIGIT 2	IC7-23
	L : PINCH SOL.ON	04 — DIGIT 3	IC7-22
	L : T-BRAKE SOL.ON	05 — DIGIT 1	IC7-37
	L : S-BRAKE SOL.ON	05 — DIGIT 2	IC7-36
	L : T-IDLER SOL.ON	05 — DIGIT 3	IC7-35
	L : S-IDLER SOL.ON	05 — DIGIT 4	IC7-34
	L : C.C.UP	07 — DIGIT 1	IC7-16
	L : C.C.DOWN	07 — DIGIT 2	IC7-15
	L : THREAD MOTOR ON	07 — DIGIT 3	IC7-13
	L : UNTHREAD MOTOR ON	07 — DIGIT 4	IC7-14
			ON SY-51 BOARD


EJECT KEY ON
FR UNTHREAD POSITION
CASSETTE UP POSITION
CASSETTE IS PUSHED OUT
510msec
200msec
1.2sec

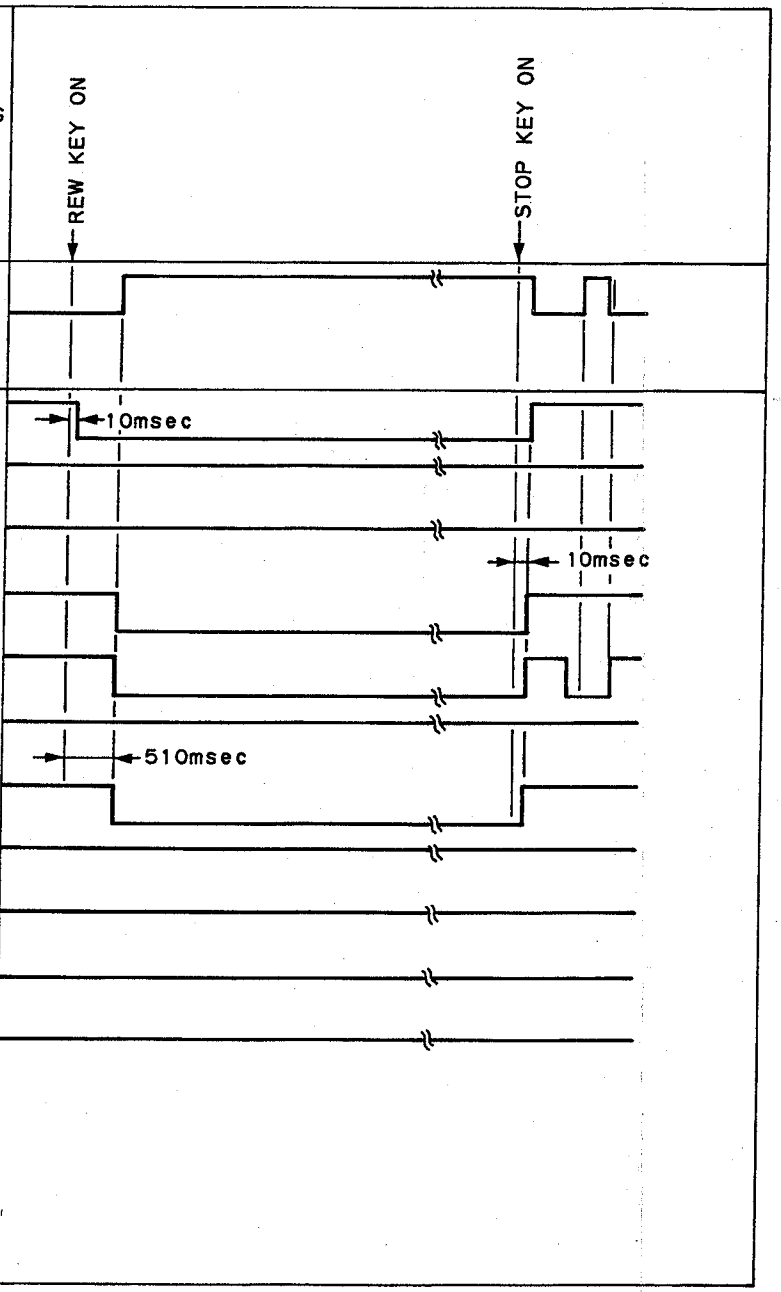
3. FF MODE (FR STOP→FF→FR STOP)

	SIGNRL	LABEL NUMBER ON DIAGNOSTICS	MEASURING POINT
INPUT	L : REEL STOP	09 — DIGIT 2	
OUTPUT	H : DRUM STOP	01 — DIGIT 1	IC7-45
	L : SEARCH SOL.ON	04 — DIGIT 2	IC7-23
	L : PINCH SOL.ON	04 — DIGIT 3	IC7-22
	L : T-BRAKE SOL.ON	05 — DIGIT 1	IC7-37
	L : S-BRAKE SOL.ON	05 — DIGIT 2	IC7-36
	L : T-IDLER SOL.ON	05 — DIGIT 3	IC7-35
	L : S-IDLER SOL.ON	05 — DIGIT 4	IC7-34
	L : C.C.UP	07 — DIGIT 1	IC7-16
	L : C.C.DOWN	07 — DIGIT 2	IC7-15
	L : THREAD MOTOR ON	07 — DIGIT 3	IC7-13
	L : UNTHREAD MOTOR ON	07 — DIGIT 4	IC7-14
			ON SY-51 BOARD



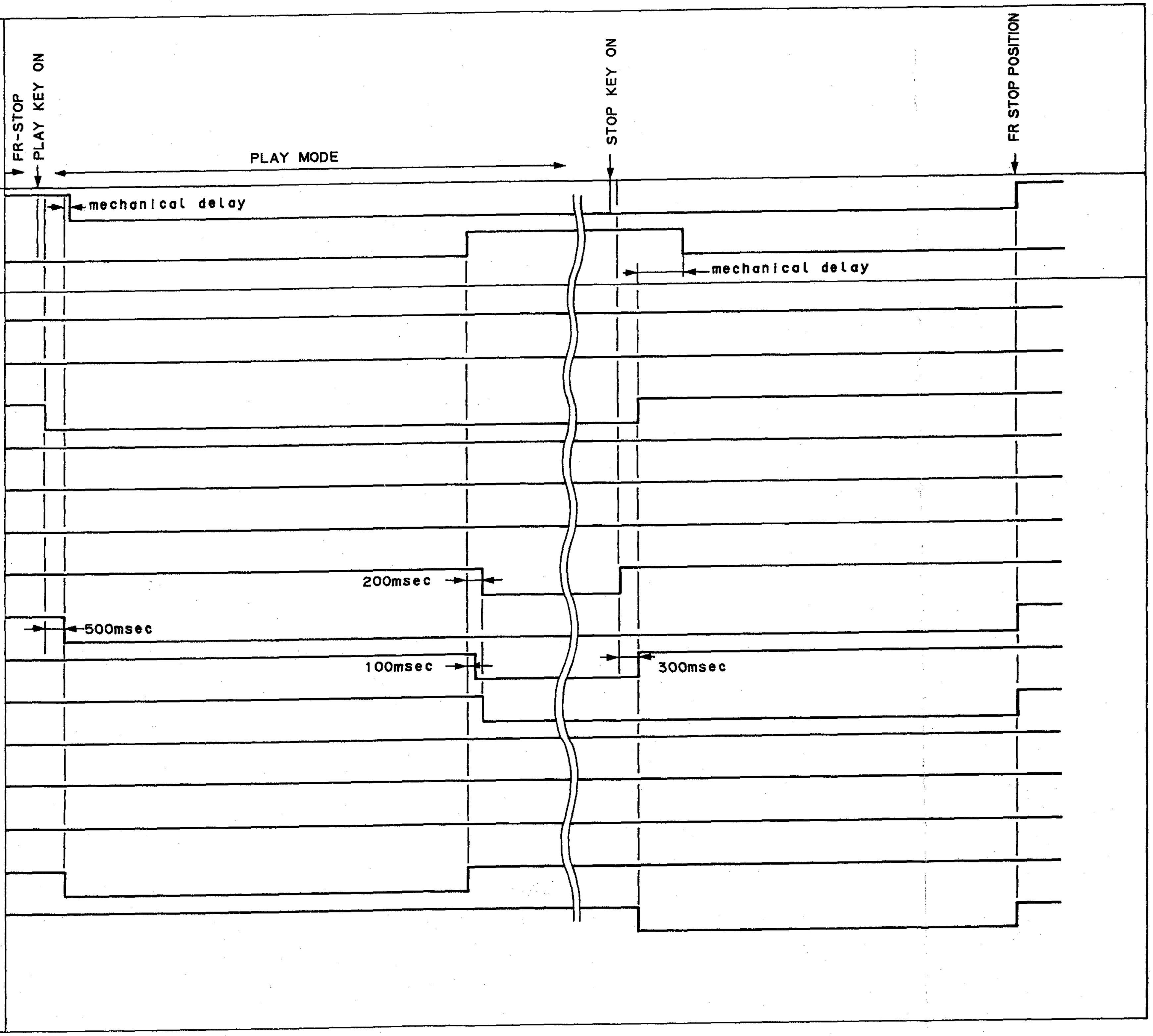
4. REW MODE (FR STOP→REW→FR STOP)

	SIGNAL	LABEL NUMBER ON DIAGNOSTICS	MEASURING POINT
INPUT	L : REEL STOP	09 — DIGIT 2	
OUTPUT	H : DRUM STOP	01 — DIGIT 1	IC7-45
	L : SEARCH SOL.ON	04 — DIGIT 2	IC7-23
	L : PINCH SOL.ON	04 — DIGIT 3	IC7-22
	L : T-BRAKE SOL.ON	05 — DIGIT 1	IC7-37
	L : S-BRAKE SOL.ON	05 — DIGIT 2	IC7-36
	L : T-IDLER SOL.ON	05 — DIGIT 3	IC7-35
	L : S-IDLER SOL.ON	05 — DIGIT 4	IC7-34
	L : C.C. UP	07 — DIGIT 1	IC7-16
	L : C.C. DOWN	07 — DIGIT 2	IC7-15
	L : THREAD MOTOR ON	07 — DIGIT 3	IC7-13
	L : UNTHREAD MOTOR ON	07 — DIGIT 4	IC7-14
			ON SY-51 BOARD



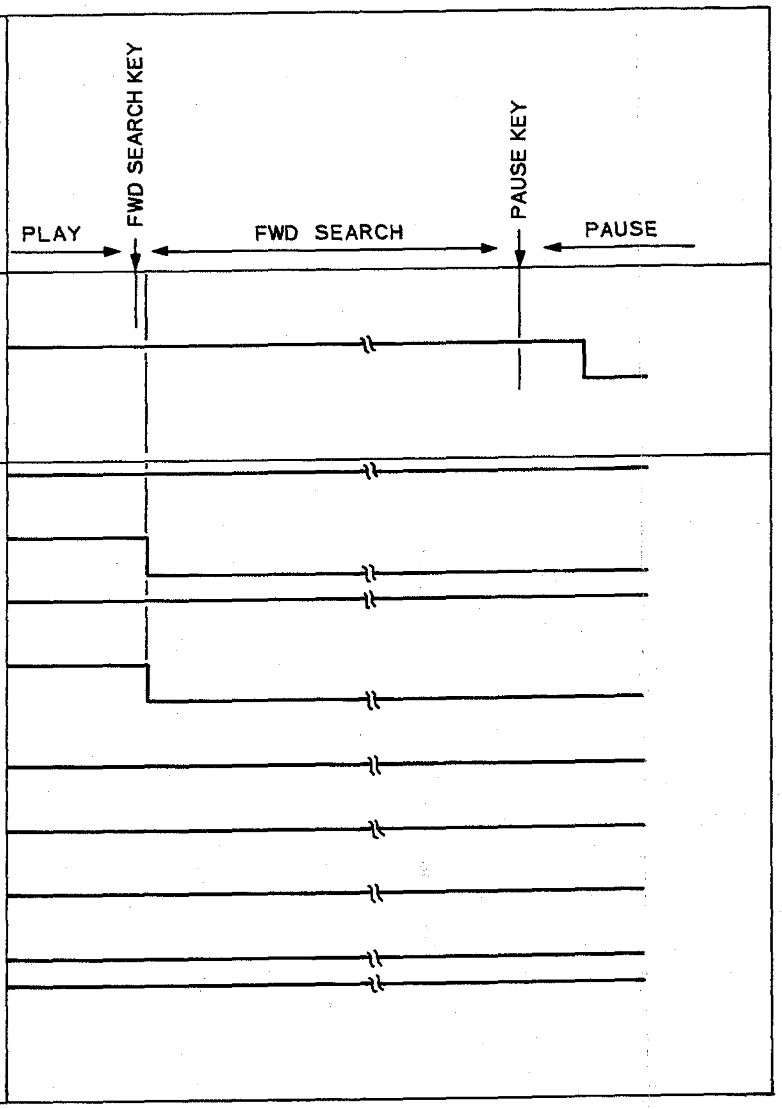
5. PLAY MODE (FR STOP→PLAY→FR STOP)

	SIGNAL	LABEL NUMBER ON DIAGNOSTICS	MEASURING POINT
INPUT	L : THREAD END	OL — DIGIT 3	IC7-5
	L : UNTHREAD END	OL — DIGIT 4	IC7-6
OUTPUT	FWD / $\overline{\text{REV}}$	00 — DIGIT 1	IC7-41
	NORMAL / $\overline{\text{SEARCH}}$	00 — DIGIT 2	IC7-40
	H : DRUM STOP	01 — DIGIT 1	IC7-45
	L : SKEW SOL.ON	02 — DIGIT 2	IC7-48
	H : REEL STILL	03 — DIGIT 3	IC7-58
	L : SEARCH SOL.ON	04 — DIGIT 2	IC7-23
	L : PINCHH SOL.ON	04 — DIGIT 3	IC7-22
	L : T-BRAKE SOL.ON	05 — DIGIT 1	IC7-37
	L : S-BRAKE SOL.ON	05 — DIGIT 2	IC7-36
	L : T-IDLER SOL.ON	05 — DIGIT 3	IC7-35
	L : S-IDLER SOL.ON	05 — DIGIT 4	IC7-34
	L : C.C UP	07 — DIGIT 1	IC7-16
	L : C.C DOWN	07 — DIGIT 2	IC7-15
	L : THREAD MOTOR ON	07 — DIGIT 3	IC7-13
	L : UNTHREAD MOTOR ON	07 — DIGIT 4	IC7-14
			ON SY-51 BOARD


FR-STOP
PLAY KEY ON
PLAY MODE
STOP KEY ON
FR STOP POSITION
mechanical delay
mechanical delay
200msec
500msec
100msec
300msec

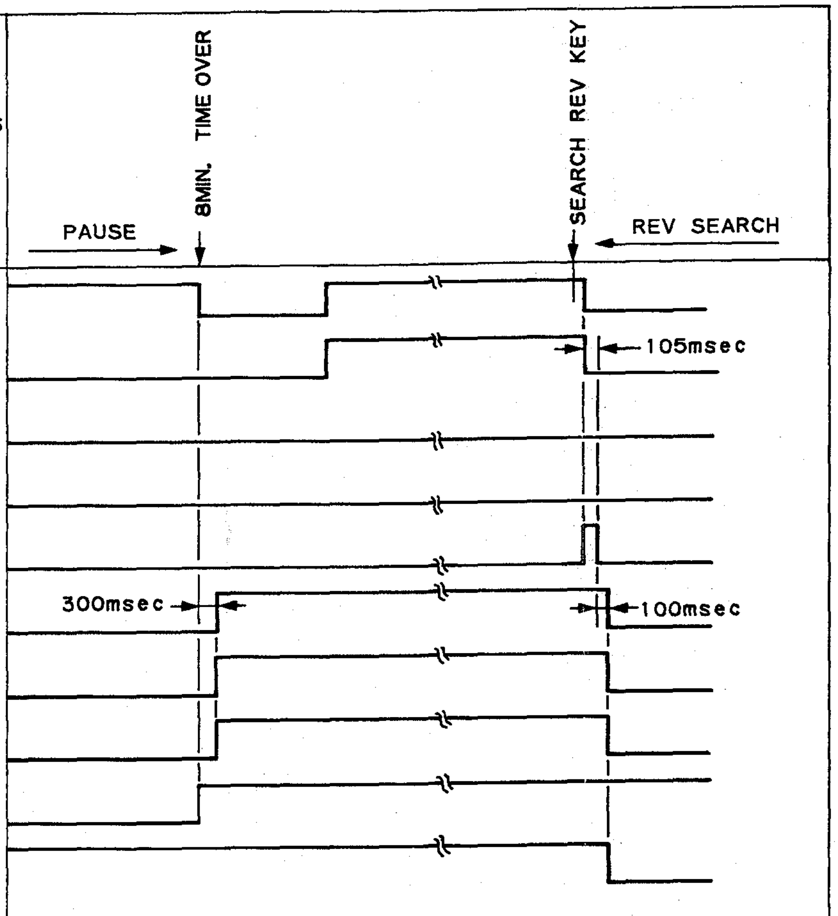
6. PLAY→FWD SEARCH→SEARCH PAUSE

	SIGNAL	LABEL NUMBER ON DIAGNOSTICS	MEASURING POINT
INPUT	L : CAPSTAN STOP	OL — DIGIT 1	IC7-8
OUTPUT	FWD / $\overline{\text{REV}}$	00 — DIGIT 1	IC7-41
	NORMAL / $\overline{\text{SEARCH}}$	00 — DIGIT 2	IC7-40
	H : REEL STILL	03 — DIGIT 3	IC7-58
	L : SEARCH SOL.ON	04 — DIGIT 2	IC7-23
	L : PINCH SOL.ON	04 — DIGIT 3	IC7-22
	L : T-BRAKE SOL.ON	05 — DIGIT 1	IC7-37
	L : S-BRAKE SOL.ON	05 — DIGIT 2	IC7-36
	L : T-IDLER SOL.ON	05 — DIGIT 3	IC7-35
	L : S-IDLER SOL.ON	05 — DIGIT 4	IC7-34
			ON SY-51 BOARD



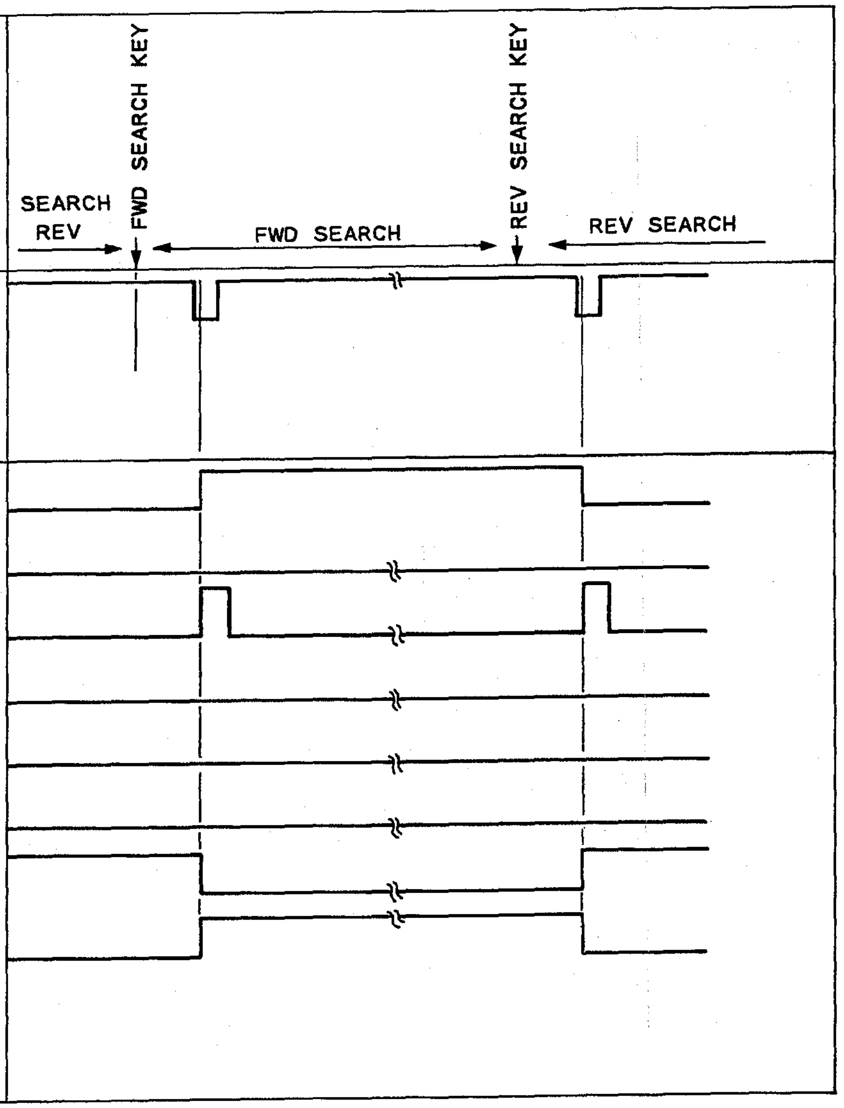
7. PLAY PAUSE→LONG PAUSE→REV SEARCH

	SIGNAL	LABEL NUMBER ON DIAGNOSTICS	MEASURING POINT
OUTPUT	FWD / $\overline{\text{REV}}$	00 — DIGIT 1	IC7-41
	NORMAL / $\overline{\text{SEARCH}}$	00 — DIGIT 2	IC7-40
	H : DRUM STOP	01 — DIGIT 1	IC7-45
	H : REEL STILL	03 — DIGIT 3	IC7-58
	L : SEARCH SOL.ON	04 — DIGIT 2	IC7-23
	L : PINCH SOL.ON	04 — DIGIT 3	IC7-22
	L : T-BRAKE SOL.ON	05 — DIGIT 1	IC7-37
	L : S-BRAKE SOL.ON	05 — DIGIT 2	IC7-36
	L : T-IDLER SOL.ON	05 — DIGIT 3	IC7-35
	L : S-IDLER SOL.ON	05 — DIGIT 4	IC7-34
			ON SY-51 BOARD


8MIN. TIME OVER
SEARCH REV KEY
PAUSE
REV SEARCH
105msec
300msec
100msec

8. REV SEARCH→(FWD PAUSE)→FWD SEARCH→(FWD PAUSE)→REV SEARCH

	SIGNAL	LABEL NUMBER ON DIAGNOSTICS	MEASURING POINT
INPUT	L : CAPSTAN STOP	OL — DIGIT 1	IC7-8
OUTPUT	FWD / $\overline{\text{REV}}$	00 — DIGIT 1	IC7-41
	NORMAL / $\overline{\text{SEARCH}}$	00 — DIGIT 2	IC7-40
	H : REEL STILL	03 — DIGIT 3	IC7-58
	L : SEARCH SOL.ON	04 — DIGIT 2	IC7-23
	L : T-BRAKE SOL.ON	05 — DIGIT 1	IC7-37
	L : S-BRAKE SOL.ON	05 — DIGIT 2	IC7-36
	L : T-IDLER SOL.ON	05 — DIGIT 3	IC7-35
	L : S-IDLER SOL.ON	05 — DIGIT 4	IC7-34
			ON SY-51 BOARD


FWD SEARCH KEY
REV SEARCH KEY
SEARCH REV
FWD SEARCH
REV SEARCH

2-12. FIXTURE

Part No.	Description
J-6001-820-A	Drum Eccentricity Gauge (3)
J-6001-830-A	Drum Eccentricity Gauge (2)
J-6001-840-A	Drum Eccentricity Gauge (1)
J-6001-930-A	Drum Eccentricity Gauge (4)
J-6009-830-A	Flatness Plate
J-6026-240-A	Adjustment Driver (for electrical alignment)
J-6130-010-A	Reel Table Height Check Base Jig
J-6130-020-A	Reel Table Height Check Jig
J-6153-020-A	Dihedral Adjustment Screwdriver
Y-2031-001-0	Cleaning Fluid
2-034-697-00	Cleaning Piece
3-702-215-01	Torque Measurement Tape (100mm dia.)
3-702-216-01	Back Tension Adjustment Jig
7-661-018-01	Sony Oil
7-732-050-20	Tension Scale (50g full scale)
7-732-050-30	Tension Scale (100g full scale)
7-732-050-40	Tension Scale (200g full scale)
7-732-050-50	Tension Scale (500g full scale)
8-960-035-61	Alignment Tape, RR5-2SC PAL
9-911-053-00	Thickness Gauge
Standard Products.	Head Demagnetizer, HE-4

SECTION 3
PERIODIC CHECK AND MAINTENANCE

It is recommended to perform the maintenance and the periodic check mentioned below for the best operation of the function and performance of the machine and for prolonging the lives of the machine and the tape.

3-1. MAINTENANCE AFTER REPAIRS

Perform the following maintenance after the repair without regarding the operating hours of the machine.

(1) Cleaning of video heads
- Press the cleaning piece moistured with the cleaning fluid and turn the drum slowly with the hand, cleaning the heads. (Never turn the motor by the electric power for the cleaning.)
- Never move the cleaning piece in the vertical direction of the head tip in the cleaning. It tends to damage the head tips.

(2) Cleaning of tape running system
- Wipe the tape bearing surfaces (of the tape guide, drum, capstan, and pinch roller) with cleaning piece saturated with the cleaning fluid.

(3) Cleaning of drive system
- Wipe the drive system (such as belt, idler, and reel table surface) with cleaning piece saturated with the cleaning fluid.

3-2. PERIODIC CHECK

Perform the maintenance checks described separately in accordance with the operational hours of the machine.

3-3. OTHERS

(1) Sony oil
- Be sure to use the Sony oil as the lubrication oil. (If oil other than the Sony oil is used, various troubles due to a different viscosity tends to be caused.)

Sony oil : Part No. 7-661-018-01
- Used the Sony oil in which dust or other foreign material have not mixed for lubricating the bearing. (If foreign material is in the oil, wear or burning of the bearing tends to be caused.)

(2) Grease

Be sure to use the following grease.

Sony grease : Part No. 7-662-001-62 (SGL-501)

(3) Regarding overhaul of equipment

When overhaul of an equipment is attempted, replace parts referring list. For the parts not listed in the the list, such as motors and heads, refer the following items.

. Reel motor : about 3,000H
. Capstan motor : about H
. Threading motor : about H
. Cassette-up compartment motor : about H
. Audio/CTL head : about 3,000H
. CTL head : about H

■ : apply oil ○ : cleaning ◆ : replace ◇ : check ◎ : apply a grease

Item	Operating Hours (H) Part No. of Replacement Parts	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	Remarks
Tape path cleaning	———	○	○	○	○	○	○	○	○	○	○	Perform whenever repair work is attempted *NOTE 1
Video heads cleaning and replace	A-6709-561-A	○	◆	○	◆	○	◆	○	◆	○	◆	Life of the video heads are affected extensively by operating ambient conditions *NOTE 2
Replacement of pinch roller	A-6750-205-A	○	◆	○	◆	○	◆	○	◆	○	◆	Life of the pinch roller are affected extensively by operating systems *NOTE 3
Replacement of FF/REW idler belt	3-668-785-00	○	○	○	◆	○	○	○	◆	○	○	———
Replacement of reel table	A-6739-016-A	○	■	○	◆	○	■	○	◆	○	■	*NOTE 4
Replacement of R brake shoe	X-3668-737-0	—	—	—	◆	—	—	—	◆	—	—	*NOTE 5
Replacement of brake band	X-3668-707-0	—	—	—	◆	—	—	—	◆	—	—	*NOTE 6
Replacement of belt on gear box	3-672-737-01	○	○	○	○	○	○	○	◆	○	○	———
Replacement of belt on cassette-up compartment	3-653-387-00	○	○	○	○	○	○	○	◆	○	○	———
Cleaning the shaft of the threading roller on the threading ring	———	—	○	—	○	—	○	—	○	—	○	Clean with a cloth saturated with a cleaning fluid *NOTE 7
Apply a grease on the ring rollers	———	—	◎	—	◎	—	◎	—	◎	—	◎	Apply a grease on the surface of the ring roller
Check the FWD back tension	———	—	◇	—	◇	—	◇	—	◇	—	◇	*NOTE 8
Check the FWD torque	———	—	◇	—	◇	—	◇	—	◇	—	◇	*NOTE 9
Check the REV torque	———	—	◇	—	◇	—	◇	—	◇	—	◇	*NOTE 10
Check the brake torque	———	—	—	—	◇	—	◇	—	◇	—	◇	*NOTE 11

*NOTE 1 :Refer to Section 3-1.

*NOTE 2 :Refer to Section 3-1.

*NOTE 3 :After this replacement, perform the adjustments as following Section 4-7 "Pinch Roller Replacement".

*NOTE 4 :After this replacement, perform the adjustments as following Section 4-7 "Take-up Reel Table Replacement" and "Supply Reel Table Replacement".

*NOTE 5 :After this replacement, perform the adjustments as following Section 4-7 "R Brake Shoe Replacement".

*NOTE 6 :After this replacement, perform the adjustments as following Section 4-7 "Brake Band Replacement".

*NOTE 7 :Refer to Section 4-6.

*NOTE 8 :Refer to Section 6-6.

*NOTE 9 :Refer to Section 6-3.

*NOTE 10 :Refer to Section 6-4.

*NOTE 11 :Refer to Section 6-1.

SECTION 4
REPLACEMENT OF MAJOR PARTS

4-1. REPLACEMENT OF UPPER DRUM ASSEMBLY

- The Rotary Video Heads cannot be replaced individually ; the whole Upper Drum Assembly must be replaced when any one of these heads fails.

Tool: Drum eccentricity gauge (1)
Drum eccentricity gauge (2)
Drum eccentricity gauge (3)
Drum eccentricity gauge (4)

Replacement procedure:

(1) Unsolder the four leads of the video head from the printed circuit board. Remove the two fixing screws, remove the Upper Drum Assembly from the Head Drum Assembly.

(2) Clean the matching surfaces of the flange and new Upper Drum Assembly with a cloth moistened with cleaning fluid. (If there is a spacer between drum and flange, it should be remain in place, or be re-installed in the same place with the new Upper Drum Assembly.)

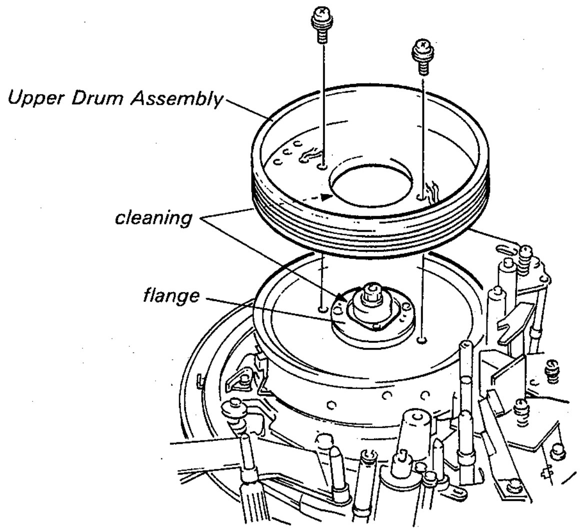
(3) Place the Upper Drum Assembly as shown in the figure. Thread the two fixing screws snugly but do not tighten.

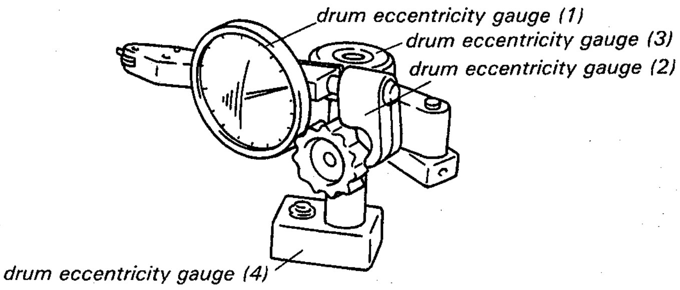
Adjustment procedure:

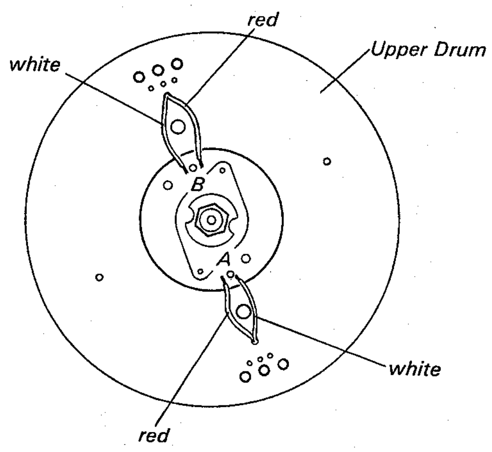
(1) Remove the S Guard Block. (Because the S Guard's bottom connector is inserted into the connector on the chassis, it need the power to remove.)

(2) Assemble the drum eccentricity gauges (1), (2), (3) and (4) as shown in the figure. Mount the assembled gauges on the machine so that the tip probe positiones at the point about 5mm apart from the top edge of the Upper Drum.

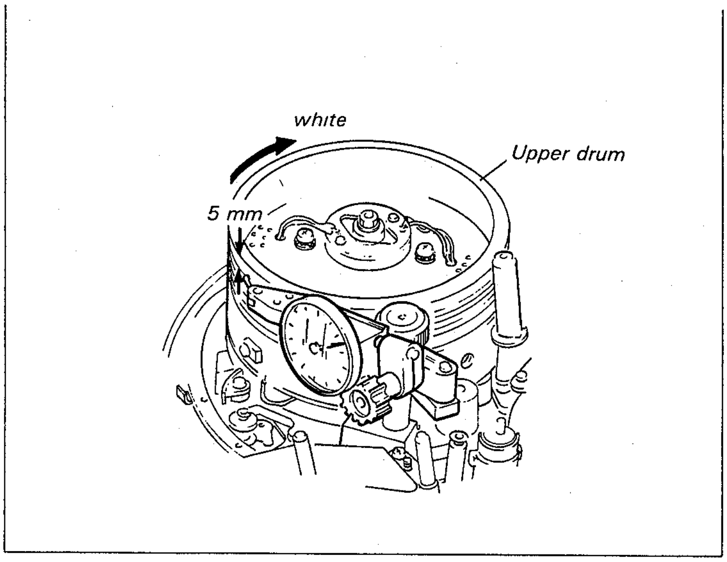
(3) Turn the Upper Drum slowly clockwise and confirm the pointer deflection of the gauge is within 5 micron during one complete turn of the Upper Drum. If this specification is satisfied, proceed with Step (5). If it is not, perform Step (4).


Upper Drum Assembly
cleaning
flange


drum eccentricity gauge (1)
drum eccentricity gauge (3)
drum eccentricity gauge (2)
drum eccentricity gauge (4)


red
white
Upper Drum
B
A
white
red

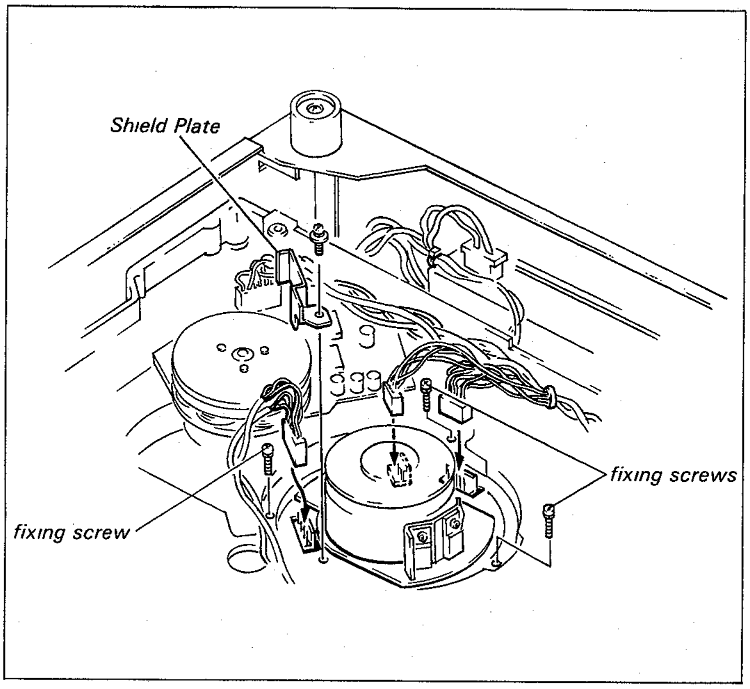
(4) Tap the inside of the Upper Drum with a nylon hammer or a screwdriver handle and like so that the gauge deflection remains within 5 micron.
(5) After the adjustment, tighten the two fixing screws that are securing the Upper Drum, alternately and gradually using a tightening torque : 14 to 16 kg.cm.
(6) After the screws are tightened, check again that the eccentricity of the Upper Drum is within 5 micron..
(7) Solder the four leads from the video heads to the printed circuit board.
(8) Install the S Guard Block.
(9) Perform the adjustments as Section 4-7.



4-2. REPLACEMENT OF DRUM ASSEMBLY

Replacement proceudre:

(1) Remove the Shield Plate.
(2) Disconnect the three connectors of the drum assembly on the back of the chassis.
(3) Remove the three fixing screws of the drum.
(4) Install the drum on the base while turning the drum assembly in the clockwise direction viewing from top of the set.
(5) Connect the three connectors.
(6) Tighten the fixing screw of the Shield Plate.
(7) After replacement, perform the adjustments as Section 4-7.



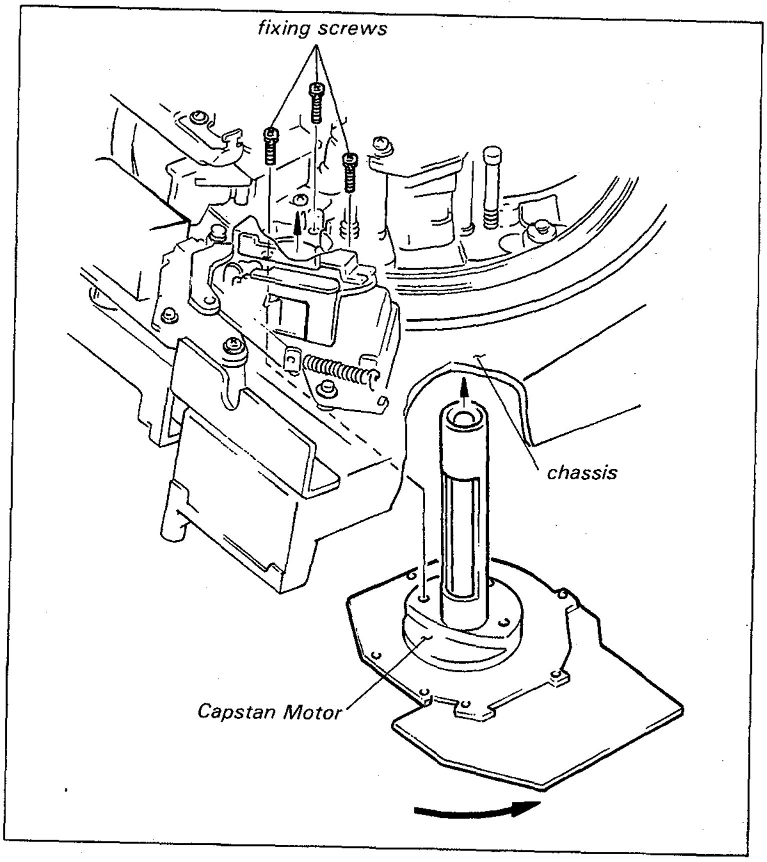
4-3. REPLACEMENT OF CAPSTAN MOTOR

Replacement procedure:

(1) Remove the Capstan Motor.

(2) Install the new Capstan Motor and thread three fixing screws snugly but do not tighten.

(3) Tighten the fixing screws while turning the Capstan Motor in the counterclockwise direction of the arrow.

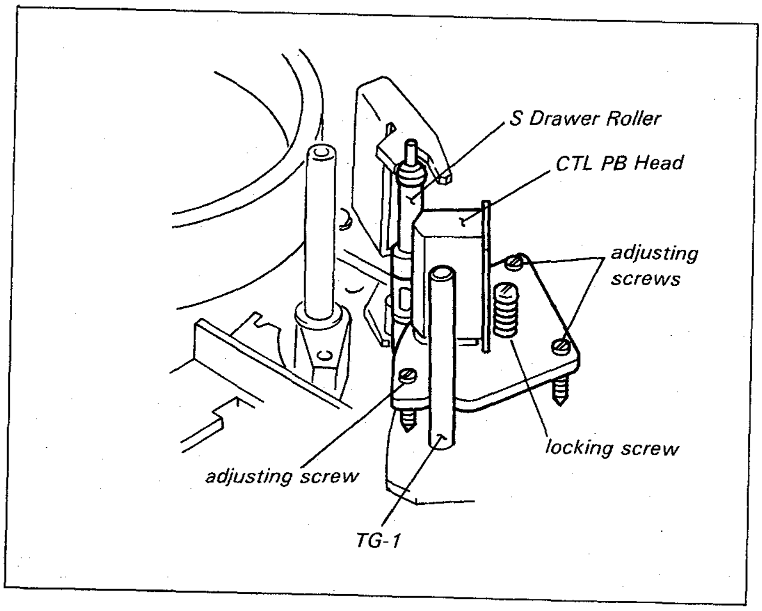

fixing screws
chassis
Capstan Motor

4-4. REPLACEMENT OF CTL PB HEAD

Replacement procedure:

(1) Remove the locking screw and remove the CTL PB Head from the chassis. (At this time, never tighten or loosen three adjusting screws.)

(2) Loosen the two fixing screws under the bracket and replace the CTL PB Head.


S Drawer Roller
CTL PB Head
adjusting screws
locking screw
adjusting screw
TG-1

4-5. REPLACEMENT OF S DRAWER ROLLER

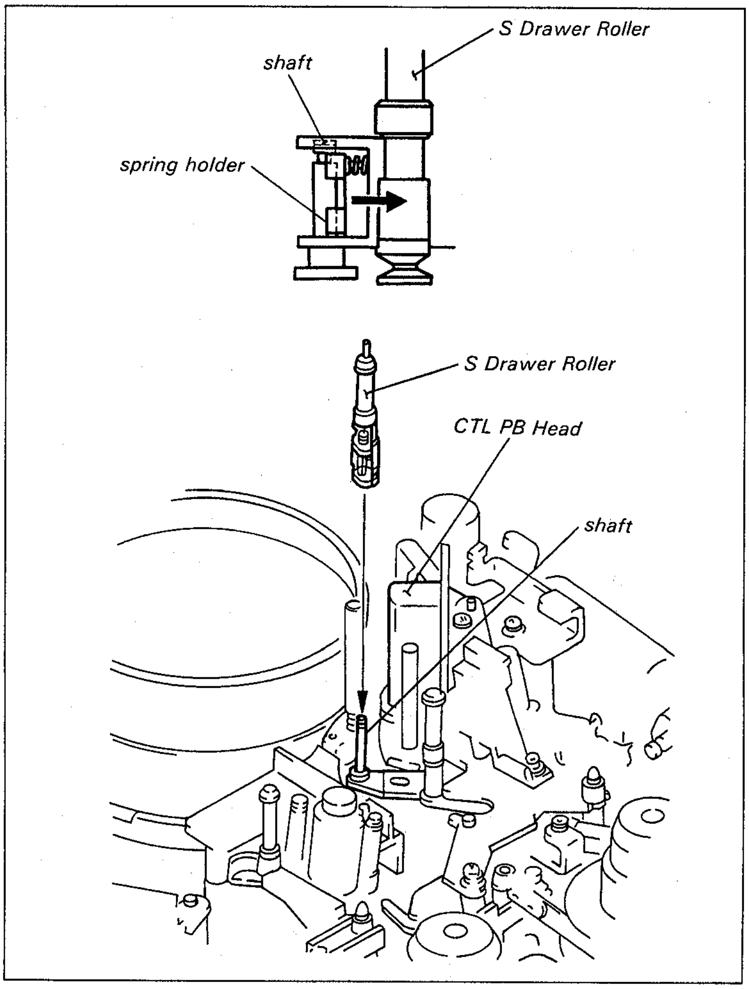
Replacement procedure:

(1) Put the machine into the EJECT completion mode without cassette tape.

(2) Turn the pulley of the Gear Box with finger until the S Drawer Roller places in front of the CTL PB Head.

(3) Remove the S Drawer Roller from the shaft while pushing the spring holder in the direction of the arrow.

(4) Install the new S Drawer Roller into the shaft until the S Drawer Roller lockes to the shaft while pushing the spring holder in the direction of the arrow.


S Drawer Roller
shaft
spring holder
S Drawer Roller
CTL PB Head
shaft

4-6. REPLACEMENT/ADJUSTMENT OF TAPE GUIDES ON THREADING RING

- There are three tape guides on the Threading Ring.
  In this section, describe to perform the three tape guides replacement and the two guides width adjustment.

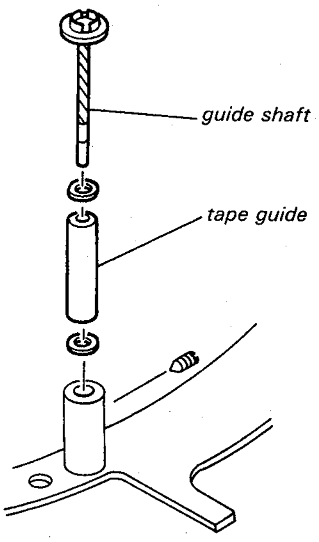
Tool: Slide vernier calliper or the equivalent
Cleaning fluid

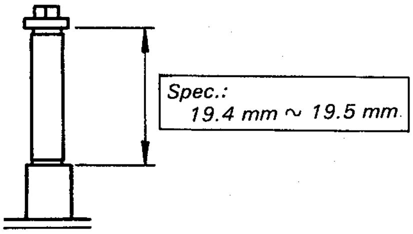
Replacement procedure:

(1) Remove the tape guide.
(2) Clean the surface of the shaft with a cloth moistened with the cleaning fluid.
(3) Assemble the parts.
(4) Adjust the guide width of the sub-ring upper tape guide and lower tape guide.

Adjustment procedure:

(1) Adjust the tape guide width to meet the required specification.





4-7. ADJUSTMENT ITEM TABLE AFTER MAIN PARTS REPLACEMENT

Replacement of Threading Ring

Threading Ring Rotation Adjustment (5-3-1) → Gear Box Position Adjustment (5-3-2) → FR Detector Block Mounting Position Adjustment (5-3-4) → Pinch Roller Position Adjustment (5-3-3) → Pinch Lever Pre-set Adjustment (5-4-1) → Pinch Roller Pre-set Adjustment (5-4-2) → FF/REW Modes Tape Path Adjustment (7-1) → T Correction Guide Slantness Adjustment (7-2) → Tape Path Adjustment Around Pinch Roller (7-6) → FWD Mode Tape Path Adjustment (1) (7-3) → FWD Mode Tape Path Adjustment (2) (7-4) → REV Mode Tape Path Adjustment (7-5) → Video Tracking Adjustment (7-7-1) → CTL PB Head Height/Azimuth/Zenith Adjustments (7-7-2) → Video Tracking Adjustment (check) (7-7-1)

Replacement of Pinch Roller

Pinch Roller Position Adjustment (5-3-3) → Pinch Roller Pre-set Adjustment (5-4-2) → → FWD Mode Tape Path Adjustment (2) (7-4) → REV Mode Tape Path Adjustment (7-5) → → Tape Path Adjustment Around Pinch Roller (7-6) → Video Tracking Adjustment (check)(7-7-1)

Replacement of Take-up Reel Table

Reel Table Height and Vertical Play Adjustment (5-1-2) → T Brake Torque Adjustment (6-1-2) → REW Brake Torque Adjustment (6-1-3) → FF/REW Torque Adjustment (6-2) FWD Torque Adjustment (6-3) → FF/REW Modes Tape Path Adjustment (7-1)

Replacement of Supply Reel Table

Reel Table Height and Vertical Play Adjustment (5-1-2) → S Brake Torque Adjustment (6-1-1) → FF/REW Torque Adjustment (6-2) → REV Torque Adjustment (6-4) → FF Back Tension Adjustment (6-5) → FWD Back Tension Adjustment (6-6) → Video Tracking Adjustment (check) (7-7-1)

Replacement of Brake Band

FF Back Tension Adjustment (6-5) → FWD Back Tension Adjustment (6-6)

Replacement of Capstan Motor

Pinch Lever Right Angle Adjustment (5-10) → Pinch Roller Position Adjustment (5-3-3) → Capstan Search Speed Adjustment (9-3) → Capstan FWD/REV Detector Adjustment (9-5) → Capstan Free Speed Adjustment (9-2) → Capstan Stop Servo Adjustment (9-4, 9-6) → FWD Mode Tape Path Adjustment (2) (7-4) → REV Mode Tape Path Adjustment (7-5) → Tape Path Adjustment Around Pinch Roller (7-6) → Video Tracking Adjustment (check) (7-7-1)

Replacement of Threading Motor

Gear Box Position Adjustment (5-3-2)

Replacement of Reel Motor

FWD Torque Adjustment (6-3) → REV Torque Adjustment (6-4)

Replacement of CTL PB Head

CTL PB Head Height/Azimuth/Zenith Adjustments (7-7-2) ——→ Video Tracking Adjustment (check) (7-7-1)

Replacement of Audio/CTL Head

Audio Head Height Adjustment (7-7-3) ——→ Audio Head Azimuth Adjustment (7-7-5) ——→ Video Tracking Adjustment (7-7-1) ——→ Audio Head Height Adjustment (7-7-3) ——→ Audio Head Azimuth Adjustment (7-7-5) ——→ Audio Head Phase Adjustment (7-7-6) ——→ Audio/CTL Head Position Adjustment (7-7-7) ——→ Audio System Alignment (all of Section 10)

Replacement of Drum Assembly

Tracking Adjustment (7-7) ——→ FF/REW Modes Tape Path Adjustment (7-1) ——→ FWD Mode Tape Path Adjustment (2) (7-4) ——→ REV Mode Tape Path Adjustment (7-5) ——→ Video Head Dihedral Adjustment (7-8) ——→ Drum AFC Level Adjustment (9-9) ——→ Drum AFC Transient Adjustment (9-10) ——→ Switching Position Adjustment (9-12)

Replacement of Upper Drum Assembly

Replacement of Upper Drum (4-1) ——→ Tracking Adjustment (7-7) ——→ FF/REW Modes Tape Path Adjustment (7-1) ——→ FWD Mode Tape Path Adjustment (2) (7-4) ——→ REV Mode Tape Path Adjustment (7-5) ——→ Video Head Dihedral Adjustment (7-8) ——→ PB RF Amplifier Adjustment (11-1; 11-1-1 to 11-1-2)

SECTION 5

LINK AND DRIVE SYSTEM ALIGNMENT

5-1. REEL TABLE SYSTEM ADJUSTMENT

5-1-1. Cassette Holder Position Adjustment

Tool: Reel table height check base jig
Thickness gauge

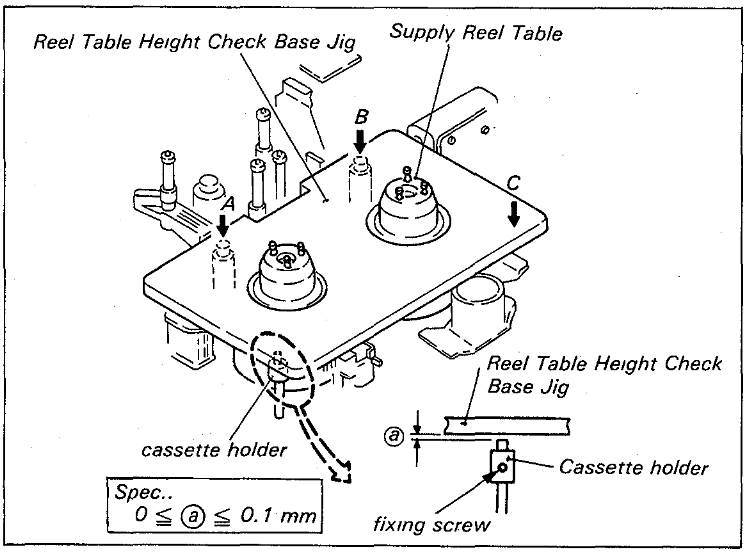
Mode: EJECT completion

Check procedure:

(1) Check that the clearance between the base jig and the cassette holder meets the required specification while pushing lightly the Reel Table Height Check Base Jig marked (A), (B) and (C) toward the chassis.

Adjustment procedure:

(1) Adjust the position of the Cassette Holder so that meets the required specification.


Reel Table Height Check Base Jig
Supply Reel Table
B
A
C
Reel Table Height Check Base Jig
ⓐ
Cassette holder
cassette holder
fixing screw
Spec..
0 ≦ ⓐ ≦ 0.1 mm

5-1-2. Reel Table Height and Vertical Play Adjustment

- Since the Reel Table Height from the chassis functions as the reference height in the entire tape thread and run system, it is requested that the Reel Table Height Adjustment should be attempted carefully, and deliberately.

Tool: Reel table height chack base jig
Reel table height check jig
Slide vernier callipers or the equivalent

Mode: EJECT completion

Check procedure:

(1) The probes of the Reel Table Height Check Jig marked "SO" and "TO" can slide over the reel table, leaving a space between the jig and the reel table, while the probes marked "SX" and "TX" are blocked, and cannot slide over reel table.

- Use the "SO" and "SX" probes for the Supply Reel Table.
- Use the "TO" and "TX" probes for the Take-up Reel Table.

(2) After tighten the upper portion of the reel table with fixing screw, push up and down the reel table for inspection. Check that the vertical play meets the required specification.

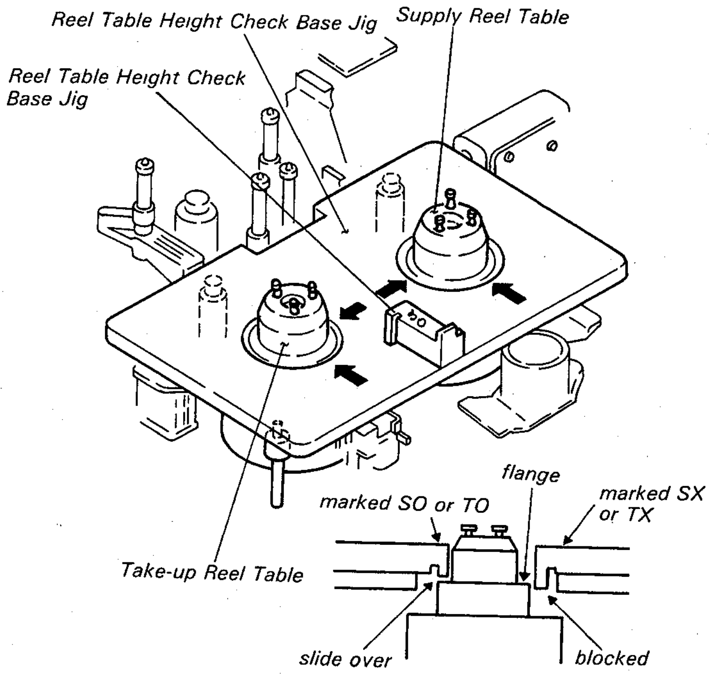
Adjustment procedure:

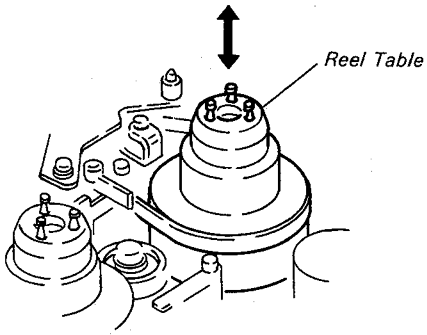
(1) Adjust height by the washer from under the reel table.

(2) Adjust vertical play by the washer on top of the reel table.

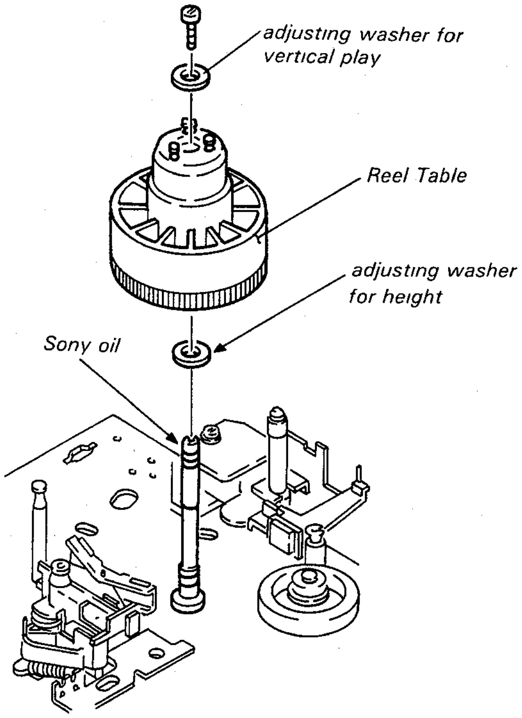
NOTE : Apply a drop of Sony oil on the reel shaft as shown in the figure, whenever the reel table is removed and is adjusted its height with washer. Amount of oil should be one drop that is scooped by tip of 2mm diameter twig such as pencil lead.

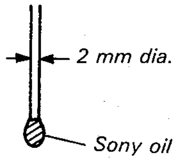
- Adjustment poly-slider washer;
  3-701-444-01 6mm dia. 0.13mm thick
  3-701-444-11 6mm dia. 0.25mm thick
  3-701-444-21 6mm dia. 0.5mm thick


Reel Table Height Check Base Jig
Supply Reel Table
Reel Table Height Check Base Jig
flange
marked SO or TO
marked SX or TX
Take-up Reel Table
slide over
blocked



Spec..
Vertical play
0.17 mm ~ 0.38 mm


adjusting washer for vertical play
Reel Table
adjusting washer for height
Sony oil


2 mm dia.
Sony oil

5-2. T DRAWER ARM ADJUSTMENT

5-2-1. T Drawer Arm EJECT Position Adjustment

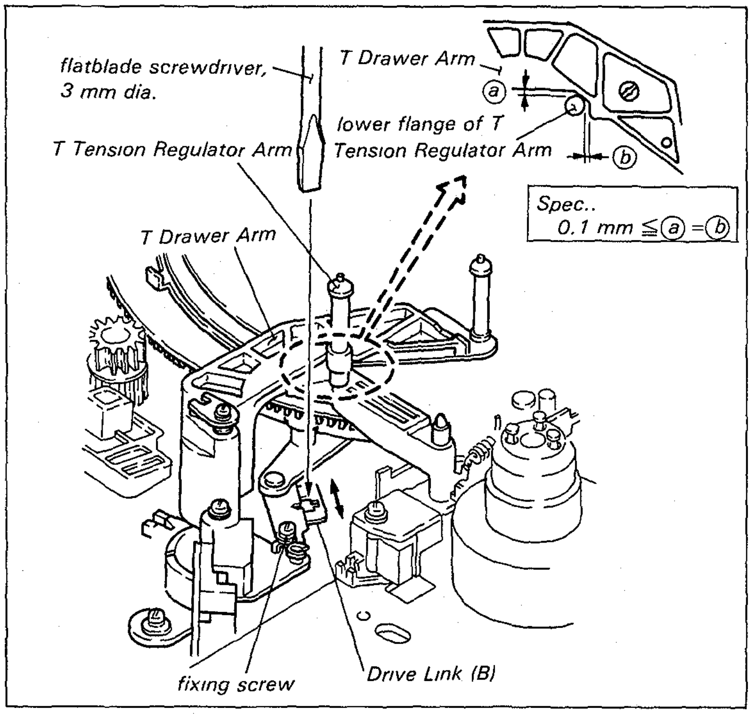
Mode: Put the machine into the FR-STOP mode without cassette tape. Press the EJECT button and put into the EJECT completion mode.

Check procedure:

(1) Check that the relationship between the lower flange of T Tension Regulator Arm and the T Drawer Arm meets the required specification.

Adjustment procedure:

(1) Adjust the position of Drive Link (B) Ass'y by the flatblade screwdriver, 3mm dia. so that meets the required specification.


flatblade screwdriver, 3 mm dia.
T Drawer Arm
ⓐ
lower flange of T Tension Regulator Arm
ⓑ
T Tension Regulator Arm
Spec.. 0.1 mm ≦ⓐ =ⓑ
T Drawer Arm
fixing screw
Drive Link (B)

5-2-2. Unthread-end Switch Position Adjustment

Tool: Black colored vinyl tape (1cm x 1.5cm)

Preparation:

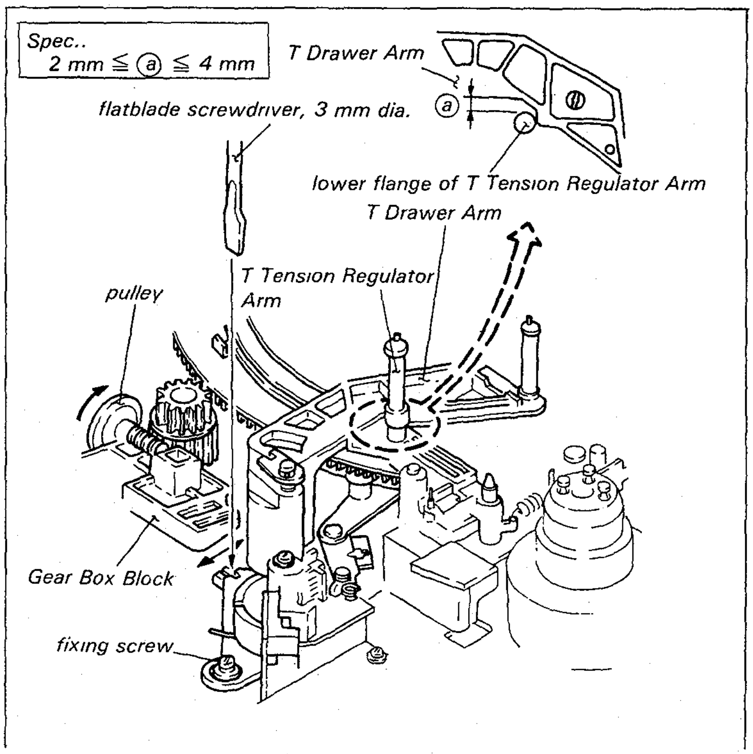
(1) Put the machine into the FR-STOP mode, turn the power OFF in the FR-STOP mode.

(2) Remove the FR Detector Block, and cover the D2 photointerrupter (FR-UNTHREAD END Detector) by the black colored vinyl tape. (Put the FR Detector in the FR-STOP mode constantly.)

Check procedure:

(1) Turn the power ON and rotate the pulley of Gear Box Block in the clockwise direction with finger.

(2) When the relationship of the T Drawer Arm and the T Tension Regulator Arm is shown in the figure, check that a energized noise of the Take-up Brake Solenoid is heard in this moment.


Spec.. 2 mm ≦ ⓐ ≦ 4 mm
T Drawer Arm
flatblade screwdriver, 3 mm dia.
ⓐ
lower flange of T Tension Regulator Arm
T Drawer Arm
pulley
T Tension Regulator Arm
Gear Box Block
fixing screw

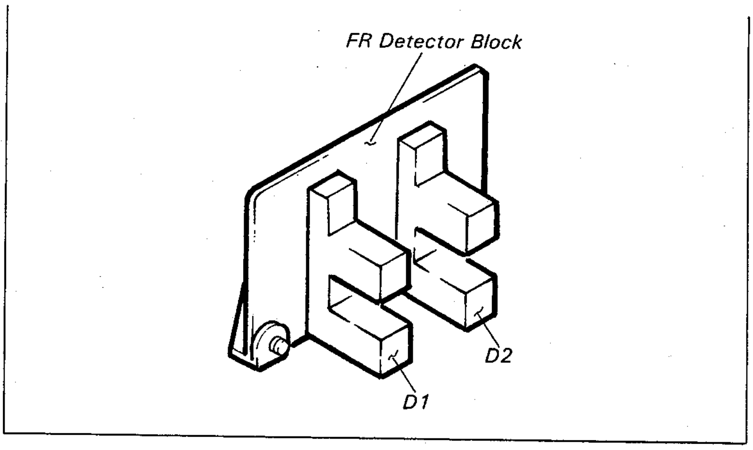
Adjustment procedure:

(1) Adjust the position of the Photointerrupter Holder by the flatblade screwdriver, 3mm dia. so that meets the required specification.

(2) Turn the power OFF, and mount the FR Detector Block after peel off the black colored vinyl tape.

(3) Adjust the FR Detector Block mounted position. (Refer to Section 5-3-4.)

(4) Hook the spring on the FR Detector Block from the Pinch Lever Block.



5-3. THREADING SYSTEM ADJUSTMENT

5-3-1. Threading Ring Rotation Adjustment

- This adjustment is required only when the Threading Ring is replaced or removed.
- If the Threading Ring is left unadjusted to have narrower clearance, the ring rotation becomes heavy, or if left to have wider clearance, tape run during threading, FWD, and REV modes will be unstable.

Mode: Check mode; EJECT completion/
threading/unthreading
Adjustment mode; EJECT completion

Check procedure:

(1) Check that the horizontal play meets the required specification when the Threading Ring is pushed in the direction of the arrow in the EJECT completion mode.

(2) Check that the rotation of the Threading Ring into the threading and unthreading modes are smooth.

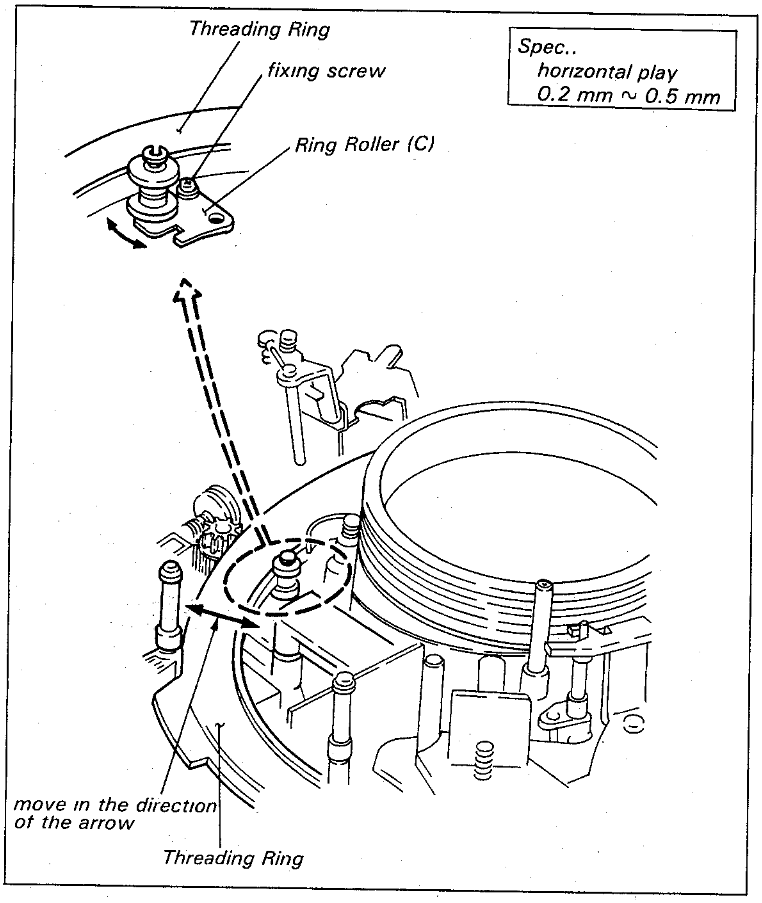
Adjustment procedure:

(1) Put the machine into the EJECT completion mode.

(2) Adjust the position of the Ring Roller (C) so that meets the required specification.

adjusting procedure;

- Insert a 0.3mm thick paper between the Threading Ring and the Ring Roller (C).
- Paper of this service manual is 0.1mm thick so that the three fold becomes 0.3mm thick.



5-3-2. Gear Box Position Adjustment

It is required that the Section 5-3-1. Threading Ring Rotation Adjustment is check to be correct or properly adjusted before initiating this adjustment.

Mode: Put the machine into EJECT completion mode, turn the pulley as shown in the figure 1/2 to 1 turn in the direction of the arrow C.

Check procedure:

(1) Put the machine into EJECT comopletion mode, turn the pulley as shown in the figure 1/2 to 1 turn in the direction of the arrow C.

(2) In order to make them easier to see during the adjustment, mark the two lines on the top surface of the gear with a black felt tip pen.

(3) Turn the pulley so that one of the lines is roughly parallel to the outer circumference of the Threading Ring.

(4) Check that the relationship between the outer circumference of the Threading Ring and the Gear meet the required specification.

Adjustment procedure:

(1) Put the machine into EJECT completion mode, turn the pulley as shown in the figure 1/2 to 1 turn in the direction of the arrow C.

(2) Turn the pulley in the direction of C or D so that one of the lines is roughly parallel to the outer circumference of the Threading Ring.

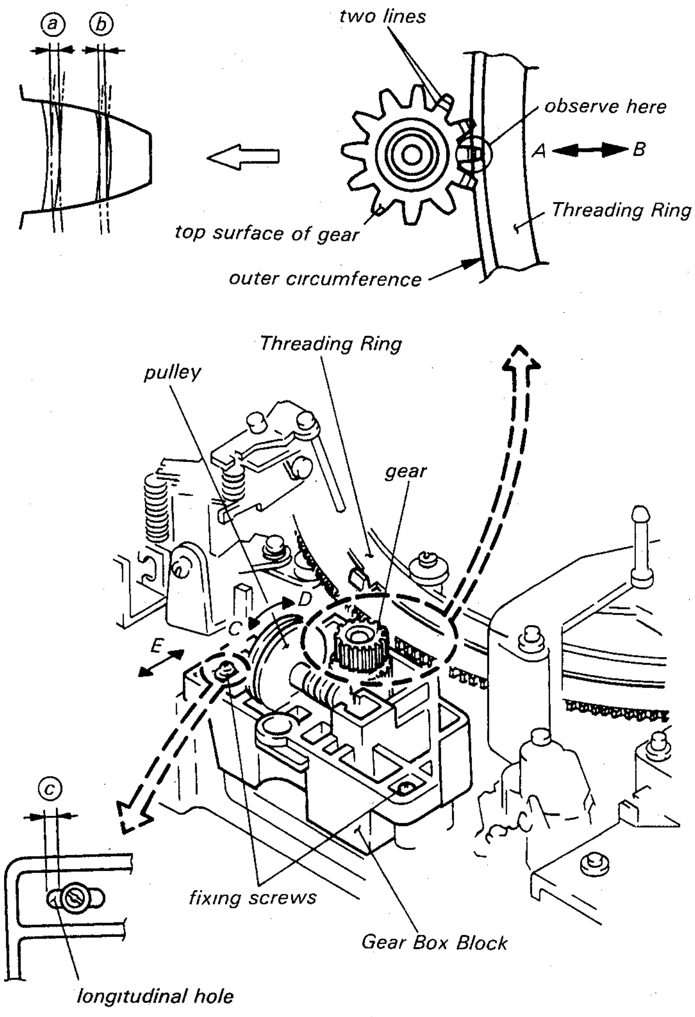
(3) Adjust the position of the Gear Box to meet the required specification in the direction of the arrow E.

(4) Check the Section 5-3-1. Threading Ring Rotation Adjustment to meet the required specification.

Spec..

(1) When the Threading Ring is moved in the direction of the arrow A, its outer circumference is within the range ⓐ (inside two lines on the gear).

(2) When the Threading Ring is moved in the direction of the arrow B, its outer circumference is within the range ⓑ (outside two lines on the gear).



Spec..
0.1 mm ≦ ⓒ ≦ 1.5 mm

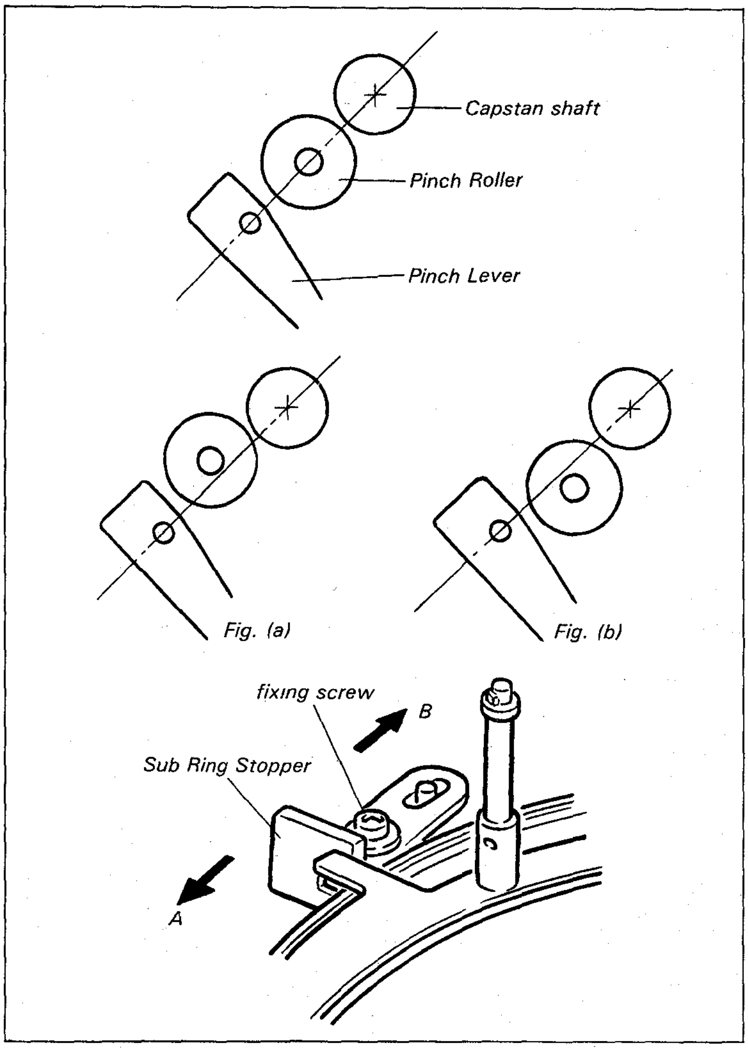
(5) When push the Threading Ring in the direction of the arrow A, the relationship between the outer circumference of the Threading Ring and the Gear meet the required specification (1).

(6) When push the Threading Ring in the direction of the arrow B, the relationship between the outer circumference of the Threading Ring and the Gear meet the required specification (2).

(7) Check that the C meet the required specification with the longitudinal hole as shown in the figure of the Gear Box Block.

5-3-3. Pinch Roller Position Adjustment

. If the Pinch Roller Position Adjustment is poor, the tape will get sear in the instance of pinch roller's pressing against the capstan.



Mode: Install the cassette tape and PLAY mode

Check procedure:

(1) Put the machine into the PLAY mode.

(2) Check that the center of Pinch Roller Shaft is in line with the Capstan Shaft and the hole in the Pinch Lever as shown in the figure.

Adjustment procedure:

. When the center of the Pinch Roller Shaft is positioned as shown in the figure (a);

(1) Loosen the fixing screw of the Sub Ring Stopper. Move the Sub Ring Stopper in the direction of the arrow (A), tighten the fixing screw.

(2) Check as check procedures.

. When the center of the Pinch Roller Shaft is positioned as shown in the figure (b);

(3) Loosen the fixing screw of the Sub Ring Stopper. Move the Sub Ring Stopper in the directioln of the arrow (B), tighten the fixing screw.

(4) Check as check procedures.

5-3-4. FR Detector Block Mounting Position Adjustment

. It is required that the Section 5-3-1. Threading Ring Rotation Adjustment is checked to be correct or properly adjusted before initiating this adjustment.

Mode: Adjustment mode; THREADING completion

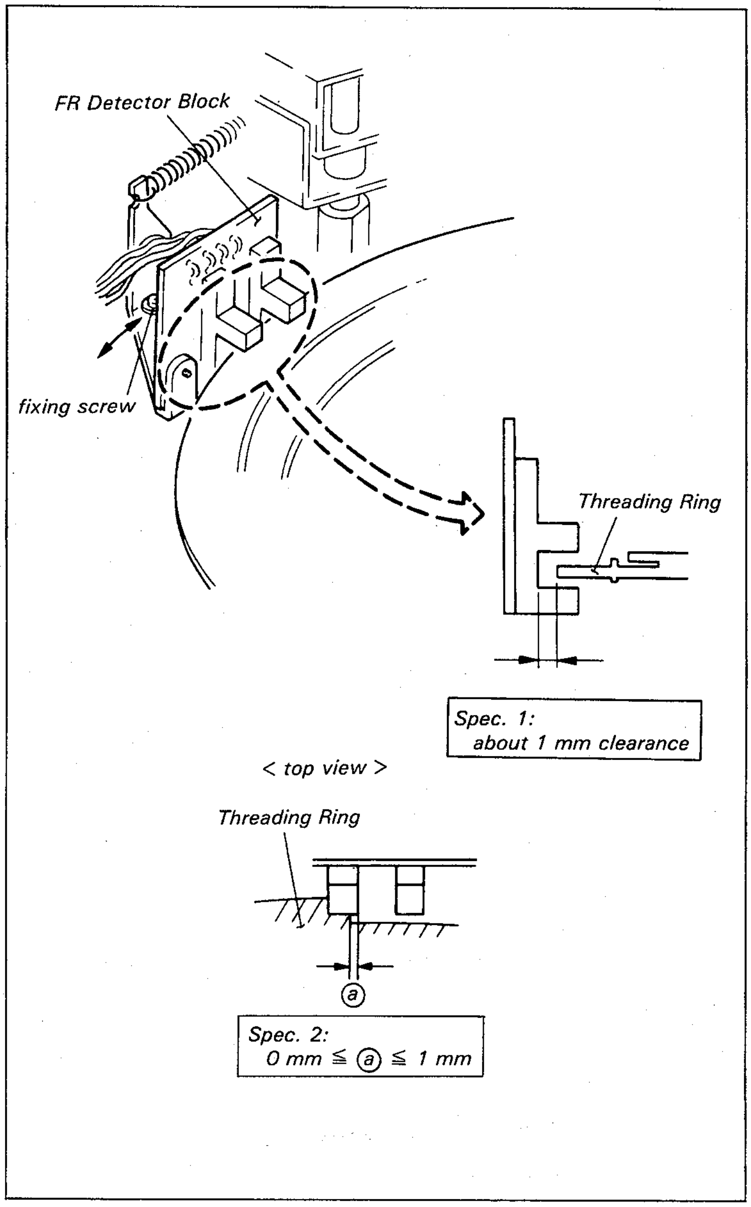
Adjustment procedure:

(1) Put the machine into THREADING completion mode and turn the power OFF.

(2) Press the FR Detector Block against the Threading Ring, return about 1mm. (Don't return more than 1.5mm) (Spec.1)

(3) Adjust the position of the FR Detector Block in the direction of the arrow so that meets the required specification 2.

(4) Check that the clearance meets the required specification 1.


FR Detector Block
fixing screw
Threading Ring
Spec. 1:
about 1 mm clearance
< top view >
Threading Ring
ⓐ
Spec. 2:
0 mm ≦ ⓐ ≦ 1 mm

5-4. PINCH LEVER BLOCK ADJUSTMENT

5-4-1. Pinch Lever Preset Adjustment

- It is required that the Section 5-3-1. Threading Ring Rotation Adjustment and the Section 5-3-3. Pinch Roller Position Adjustment are checked to be correct or properly adjusted before initiating this adjustment.

Mode: Turn the power OFF in PLAY mode

Check procedure:

(1) Turn the power OFF in PLAY mode. Check that the position of the Pinch Solenoid Pin meets the required specification.

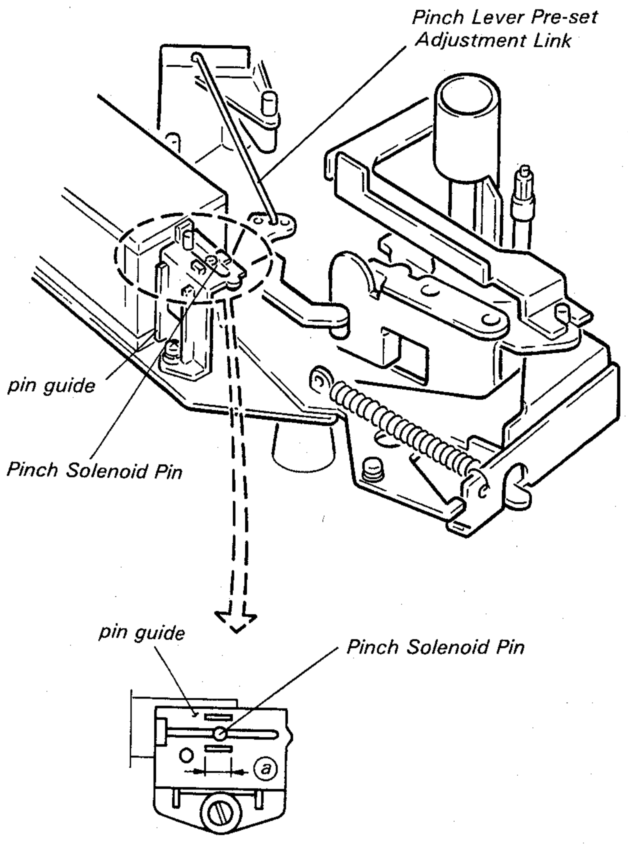
(2) Turn the power ON, press the PLAY button after once unthreading. Check as procedure (1).

Adjustment procedure:

(1) Adjust the position of the Pinch Solenoid to meet the required specification, refer to Section 5-7-4. Pinch Mounting Position Adjustment.

(2) If does not meet the required specification in Step (1), adjust the position of the Sub Ring Stopper to meet the required specification, refer to Section 5-3-3. Pinch Roller Position Adjustment.

(3) If does not meet the required specification in Steps (1) and (2), select the Pinch Lever Preset Adjustment Link to the proper hole of the Preset Lever Ass'y to meet the required specificaiton. Perform Steps (1) and (2) again.



Spec.:
The outerr circumference of the Pinch Solenoid Pin is placed in the ⓐ portion of the pin guide.

5-4-2. Pinch Roller Pre-set Adjustment

- It is required that the Section 5-3-1. Threading Ring Rotation Adjustment and the Section 5-3-3. Pinch Roller Position Adjustment are checked to be correct or properly adjusted before initiating this adjustment.

Mode: PLAY mode

Tool: Thickness gauge

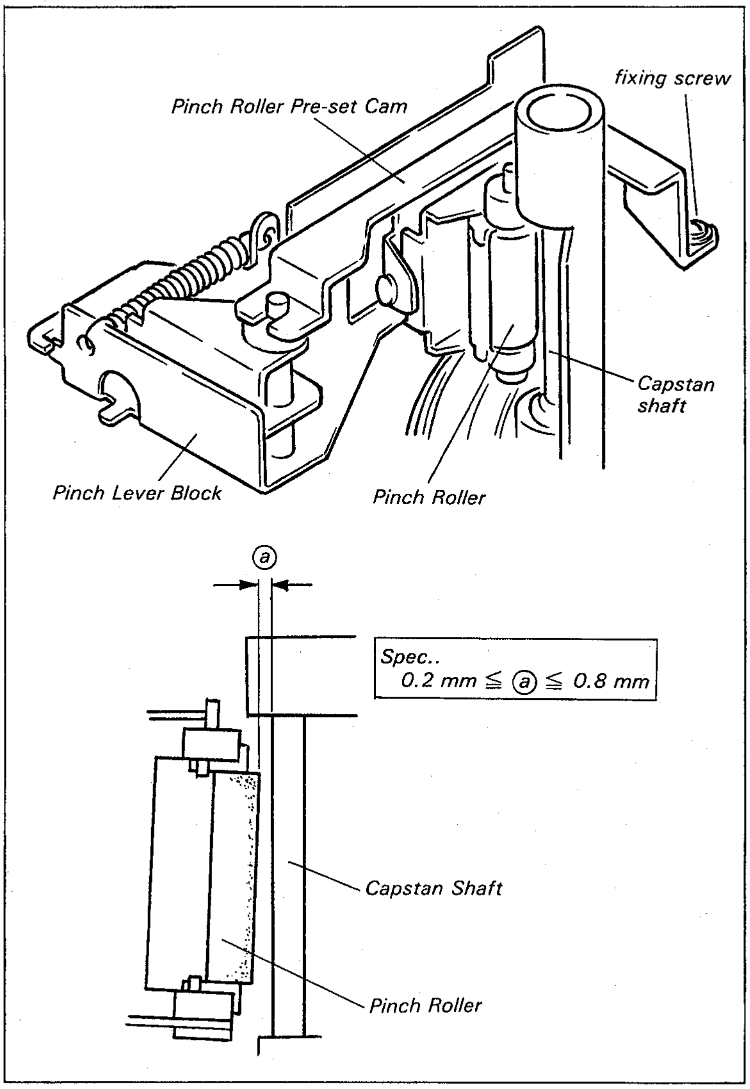
Check procedure:

(1) Check that the clearance between the Pinch Roller and the Capstan Shaft meets the required specification.

Adjustment procedure:

(1) Adjust the position of the Preset Cam to meet the required specification.

(2) Repeat the unthreading and the threading modes two or three times and check to meet the required specification.


fixing screw
Pinch Roller Pre-set Cam
Capstan shaft
Pinch Lever Block
Pinch Roller
ⓐ
Spec..
0.2 mm ≦ ⓐ ≦ 0.8 mm
Capstan Shaft
Pinch Roller

5-4-3. Pinch Solenoid Block Position Adjustment

Mode: PLAY mode

Tool: Thickness gauge

Check procedure:

(1) Insert the cassette tape and put the machine into PLAY mode.

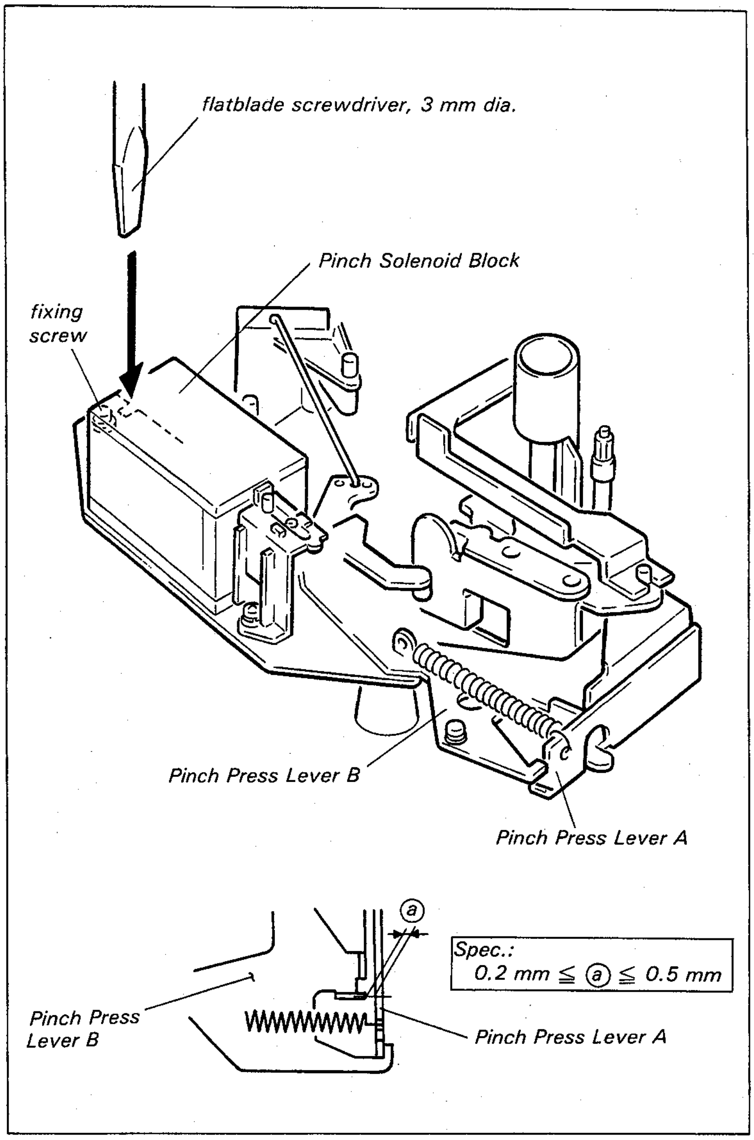
(2) Check that the clearance between the Pich Press Lever A and B meet the required specificaiton.

(3) Repeat the unthreading and the threading modes two or three times and check as procedure (2).

Adjustment procedure:

(1) Adjust the position of the Pinch Solenoid Block with flatblade screwdriver, 3mm dia. in PLAY mode to meet the required specification.

(2) Confirm as check procedures (2) and (3).


flatblade screwdriver, 3 mm dia.
Pinch Solenoid Block
fixing screw
Pinch Press Lever B
Pinch Press Lever A
ⓐ
Pinch Press Lever B
Pinch Press Lever A

Spec.:
0.2 mm ≦ ⓐ ≦ 0.5 mm

5-5. T TAPE SENSOR POSITION ADJUSTMENT

- There are two adjustments of the height and the clearance between a tape and LED in this section.

Mode: Insert the tape and put the machine into FR-STOP and PLAY modes.

Tool: Thickness gauge

Check procedure:

(1) Insert the cassette tape and put the machine into the FR-STOP mode. Push the tape against the cassette tape side with finger as shown in the figure. Check that the clearance between the top edge of a tape and the bottom side of T Photo Holder Block (black colored plastic) meets the required specification. (Spec.(1))

(2) Put the machine into PLAY mode.

(3) When viewing from the top of the set, check that the ※※ marked portion of the T Tape Sensor Block is placed above the top flange portion of the T Tension Regulator Arm (as shown in the figure "A"). (Spec.(2))

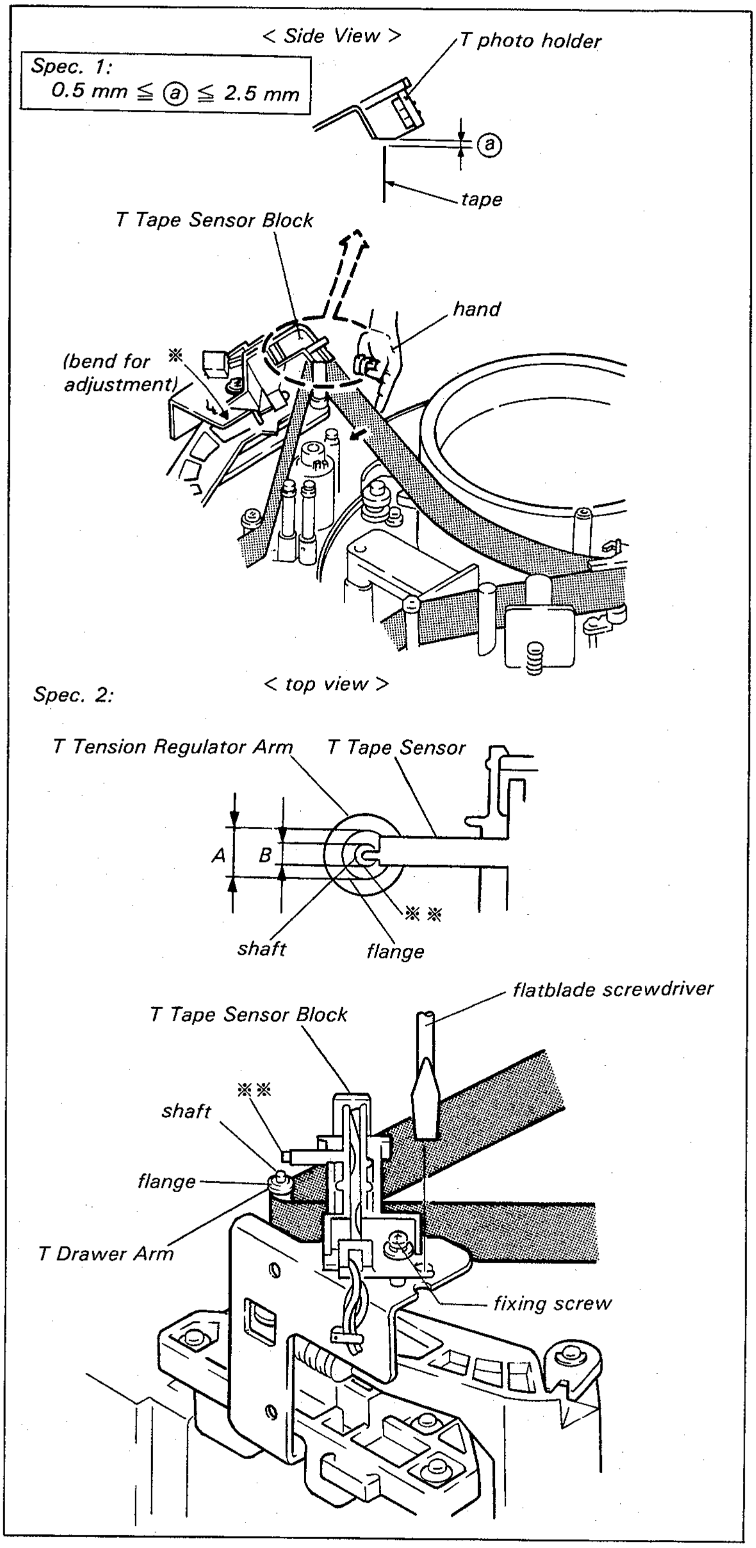
Adjustment procedure:

(1) Bend the ※ marked position with pliers so that meets the required specification (1). Confirm as check procedures (2) and (3).

(2) Loosen the fixing screw of the T Tape Sensor Block 1/2 to 1 turn.

(3) When viewing from the top of the set, in PLAY mode, adjust the position of the T Tape Sensor Block with flatblade screwdriver so that the ※※ marked portion of the T Tape Sensor Block is placed above the shaft of the T Tension Regulator Arm (as shown in the figure "B").

(4) confirm as check procedure (1).



< Side View >
T photo holder
Spec. 1:
0.5 mm ≦ ⓐ ≦ 2.5 mm
ⓐ
tape
T Tape Sensor Block
hand
(bend for adjustment)
※
Spec. 2:
< top view >
T Tension Regulator Arm
T Tape Sensor
A
B
※※
shaft
flange
flatblade screwdriver
T Tape Sensor Block
※※
shaft
flange
T Drawer Arm
fixing screw

5-6. TENSION ARM SYSTEM ADJUSTMENT

5-6-1. S Drawer Roller Ass'y Limiter Adjustment

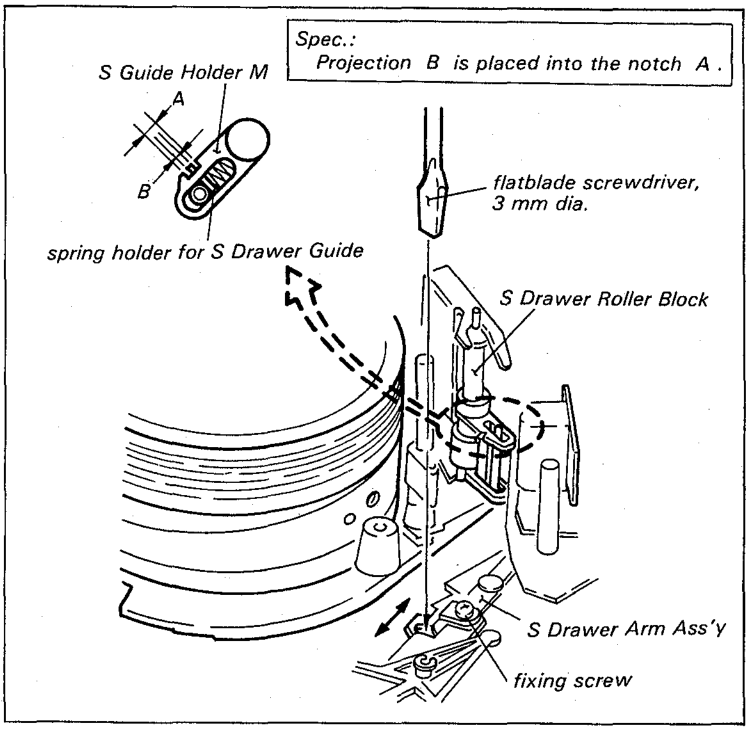
Mode: FR-STOP mode

Check procedure:

(1) Check that the B portion of the Spring Holder for the S Drawer Guide is placed into notch, at A portion, of the S Guide Holder M.

Adjustment procedure:

(1) Adjust the position of the S Drawer Arm Ass'y by the flatblade screwdriver, 3mm dia. so that meets the required specification.


Spec.:
Projection B is placed into the notch A .
S Guide Holder M
A
B
spring holder for S Drawer Guide
flatblade screwdriver, 3 mm dia.
S Drawer Roller Block
S Drawer Arm Ass'y
fixing screw

5-6-2. T Tension Regulator Operation Position Adjustment

Mode: FR-STOP mode

Tool: Thickness gauge

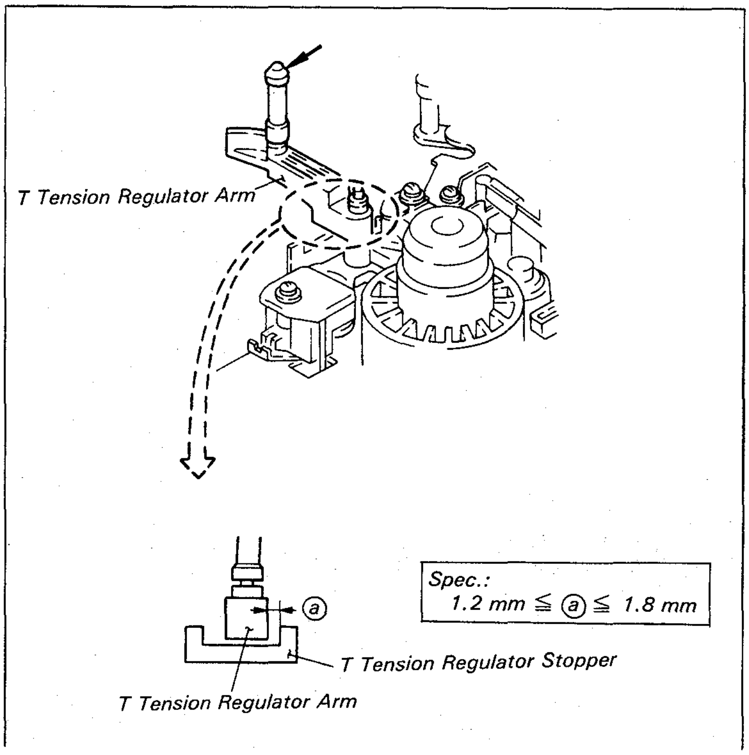
Check procedure:

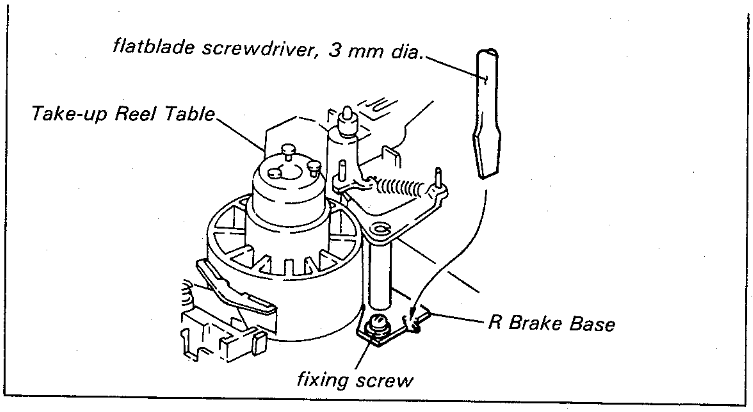
(1) Push the T Tension Regulator Arm lightly to the left with finger as far as it will go (in the arrow direction), remove the finger gently.

(2) Check that the clearance between the T Tension Regulator Arm and the stopper meet the required specification.

Adjustment procedure:

(1) Adjust the position of the R Brake Lever by the flatblade screwdriver, 3mm dia. so that it meets the required specification.


T Tension Regulator Arm
ⓐ
Spec.:
1.2 mm ≦ ⓐ ≦ 1.8 mm
T Tension Regulator Stopper
T Tension Regulator Arm


flatblade screwdriver, 3 mm dia.
Take-up Reel Table
R Brake Base
fixing screw

5-6-3. S Tension Regulator Operating Position Adjustment

Mode: FF mode

Check procedure:

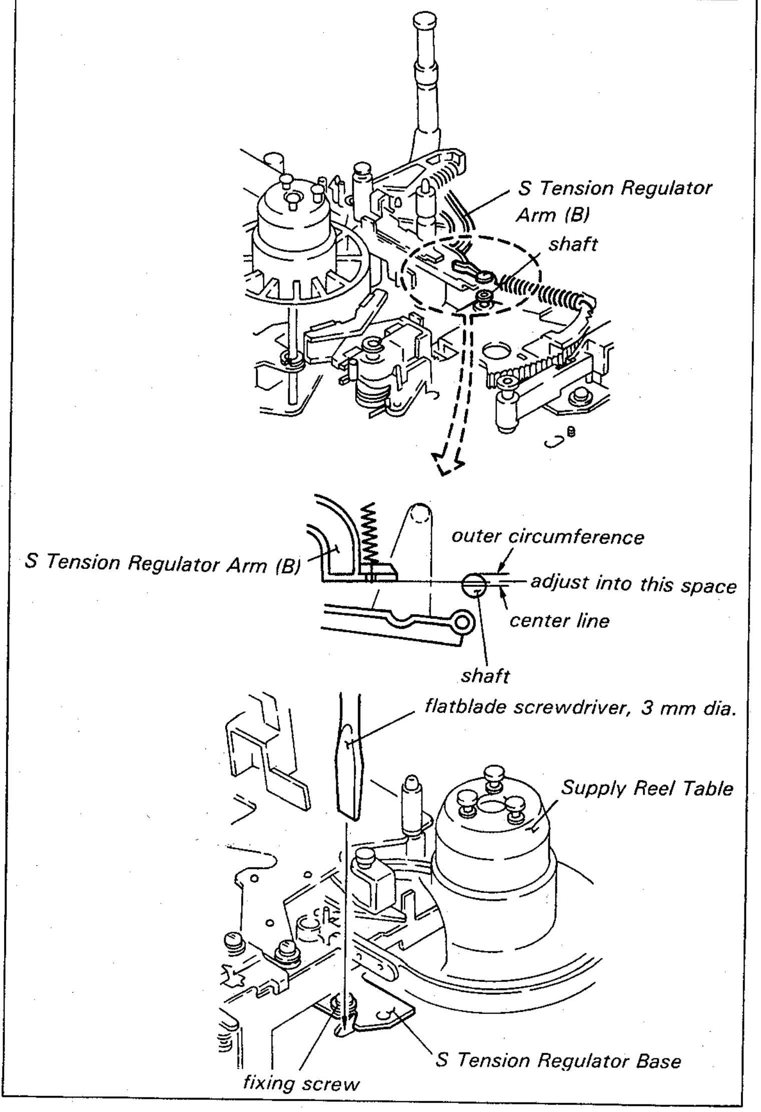
(1) Put the machine into FF mode without cassette tape.

(2) Check that the edge of the S Tension Regulator Arm (B) meets the required specification.

Adjustment procedure:

(1) Adjust the position of the S Tension Regulator Base so that it meets the required specification.

Spec.:
Edge of the S Tension Regulator Arm is placed between the center line and the outer circumference of the shaft.


S Tension Regulator Arm (B)
shaft
outer circumference
S Tension Regulator Arm (B)
adjust into this space
center line
shaft
flatblade screwdriver, 3 mm dia.
Supply Reel Table
S Tension Regulator Base
fixing screw

5-6-4. Tension Detector Position Adjustment

Mode: FWD/REV mode

Tool: DC voltmeter

Preparation:

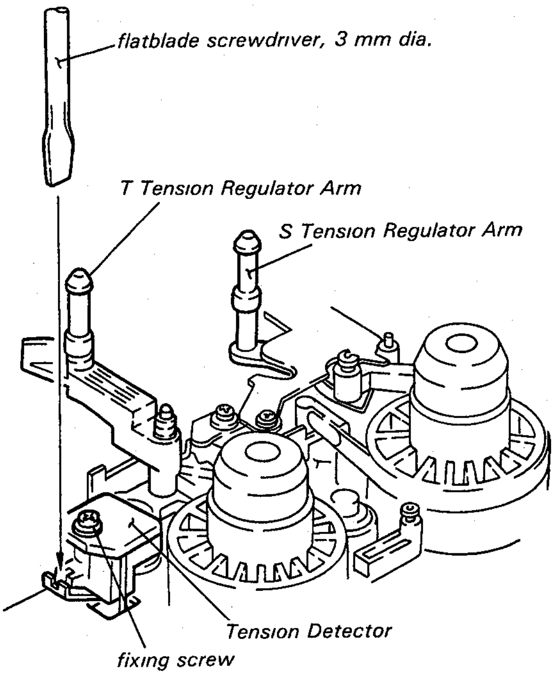
(1) Connect the dc voltmeter to TP1 on the SY-51 Board.

Check procedure:

(1) Put the machine into FWD mode without cassette tape.

(2) Push the T Tension Regulator Arm to the right with finger as far as it will go. Check that the dc voltage is more than 8V.

(3) Push the T Tension Regulator Arm to the left with finger as far as it will go. Check that the dc voltage is less than 2.5V with flatblade screwdriver 3mm dia..


flatblade screwdriver, 3 mm dia.
T Tension Regulator Arm
S Tension Regulator Arm
Tension Detector
fixing screw

5-7. SOLENOID SYSTEM ADJUSTMENT

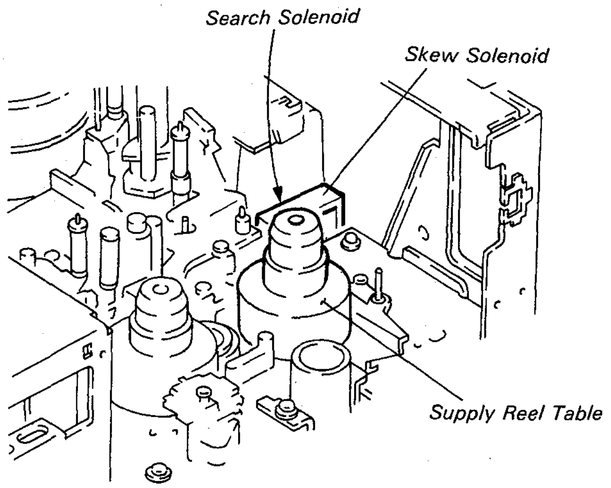
5-7-1. Search Solenoid Mounting Position Adjustment

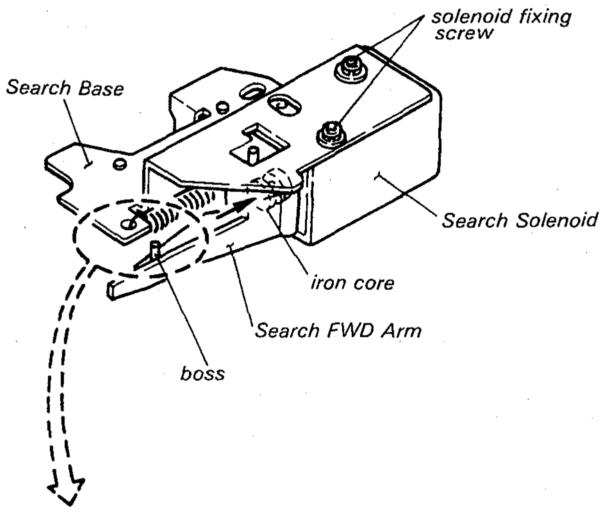
- This adjustment is usually not required. But proceed with the following step only when the Search Solenoid is replaced or removed.

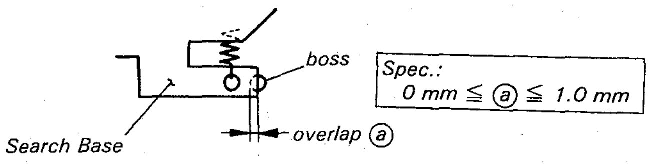
Mode: Remove the Search Solenoid Block form the chassis.

Adjustment procedure:

(1) Move the iron core into the fully energized position (indicated by the arrow as far as it will go). Adjust the mounting position of the Search Solenoid so that the overlap of the Search FWD Arm Boss and the Search Base meet the required specification.


Search Solenoid
Skew Solenoid
Supply Reel Table


solenoid fixing screw
Search Base
Search Solenoid
iron core
Search FWD Arm
boss


boss
Search Base
overlap ⓐ

Spec.:
0 mm ≦ ⓐ ≦ 1.0 mm

5-7-2. T Idler Solenoid Position Adjustment

- This adjustment is performed when T Idler Solenoid is replaced or removed, and F.FWD Torque does not meet the required specification.

Mode: F.FWD mode without cassette tape

Adjustment procedure:

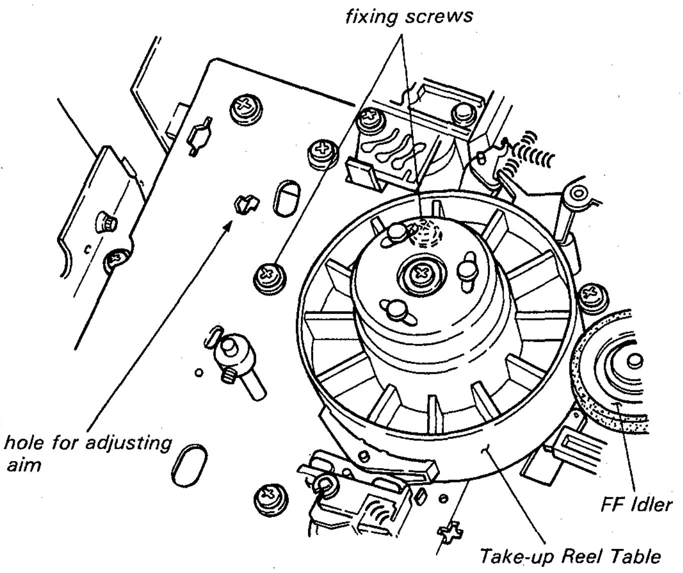
(1) Put the machine into F.FWD mode without cassette tape.

(2) Loosen the fixing screws of the T Idler Solenoid about 1/2 turn.

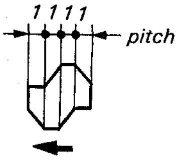
(3) Adjust the position of the T Idler Solenoid so that 0.01mm to 0.1mm clearance exists between the Take-up Reel Table and the FF Idler.

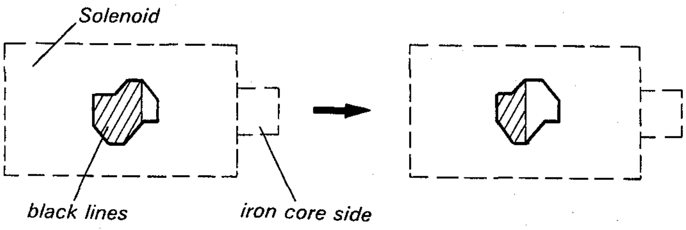
(4) Note the hole to be provided for adjusting aim after proceeding the procedure (3). Confirm that where the black lines of this Solenoid is placed in this hole.

(5) Move the Solenoid in the direction of the arrow only one pitch from the position of procedure (4). Tighten the fixing screws.


fixing screws
hole for adjusting aim
FF Idler
Take-up Reel Table

< one pitch >




Solenoid
black lines
iron core side

5-7-3. S Idler Solenoid Position Adjustment

This adjustment is required only when the Supply Idler Solenoid is replaced or removed, and the REW Torque does not meet the required specification.

Mode: REW mode without cassette tape

Adjustment procedure:

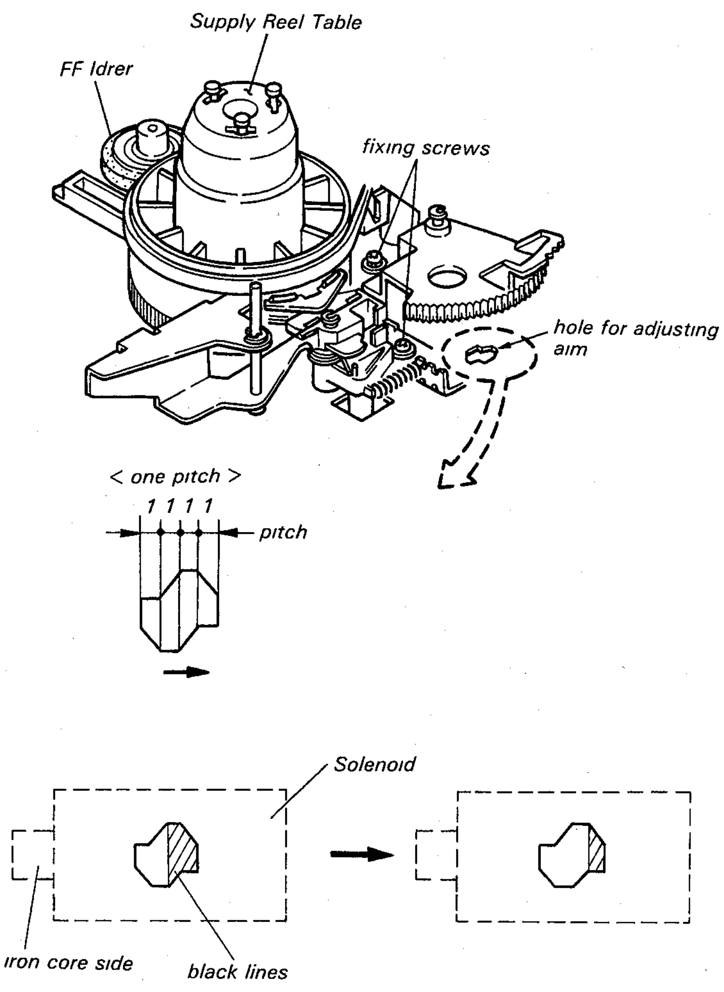
(1) Put the machine into REW mode without cassette tape.

(2) Loosen the fixing screws of the Supply Idler Solenoid about 1/2 turn.

(3) Adjust the position of the S Idler Solenoid so that 0.01mm to 0.1mm clearance exists between the Supply Reel Table and the FF Idler.

(4) Note the hole to be provided for adjusting aim after proceeding the procedure (3). Confirm that where the black lines of this Solenoid is placed in this hole.

(5) Move the Solenoid in the direction of the arrow only one pitch from the position of procedure (4). Tighten the fixing screws.


Supply Reel Table
FF Idrer
fixing screws
hole for adjusting aim
< one pitch >
1 1 1 1
pitch
Solenoid
iron core side
black lines

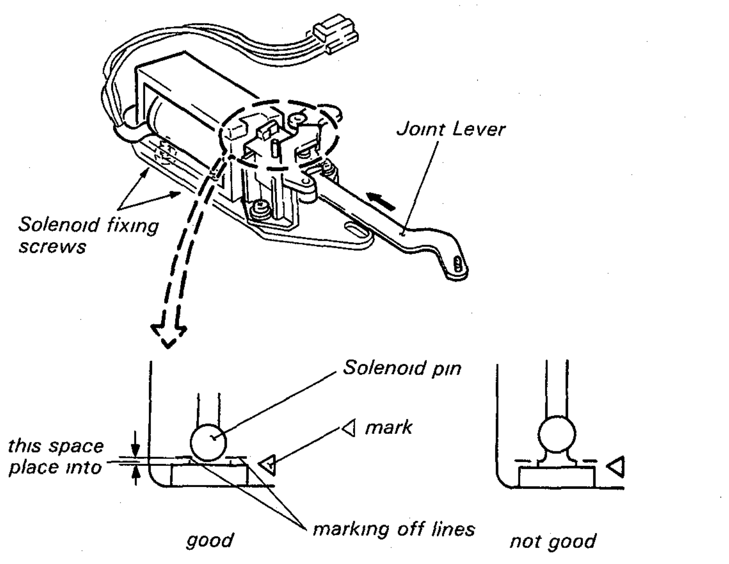
5-7-4. Pinch Solenoid Mounting Position Adjustment

This adjustment is usually not required. but proceed with the following step only when the Pinch Solenoid is replaced or removed.

Mode: Remove the Pinch Solenoid Block from the chassis.

Adjustment procedure:

(1) When the iron core of the solenoid into the fully eneregized position moving the Joint Lever in the direction of the arrow, adjust the solenoid mounting position so that the outer circumference of Solenoid Pin meets the required specification.


Joint Lever
Solenoid fixing screws
Solenoid pin
◁ mark
this space place into
marking off lines
good
not good

Spec..
The outer circumference of solenoid pin is placed into between ◁ mark and marking off lines.

5-7-5. T Brake Solenoid Position Adjustment

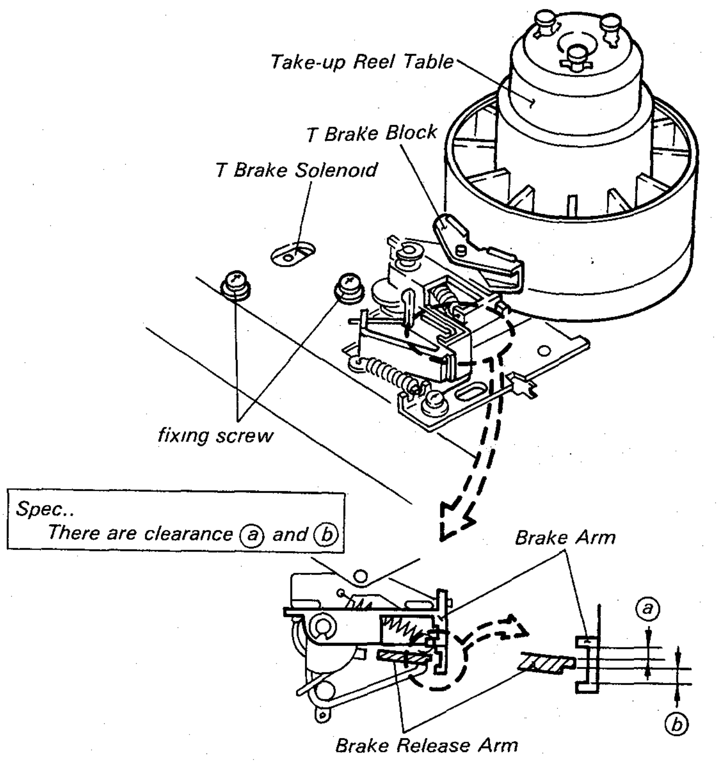
Mode: REW mode without cassette tape

Check procedure:

(1) Check that the positional relationship between the Brake Release Arm and the Brake Arm meets the required specification.

Adjustment procedure:

(1) Adjust the position of the T Brake Solenoid to meet the required specification.


Take-up Reel Table
T Brake Block
T Brake Solenoid
fixing screw
Brake Arm
ⓐ
ⓑ
Brake Release Arm

Spec..
There are clearance ⓐ and ⓑ

5-7-6. S Brake Solenoid Position Adjustment

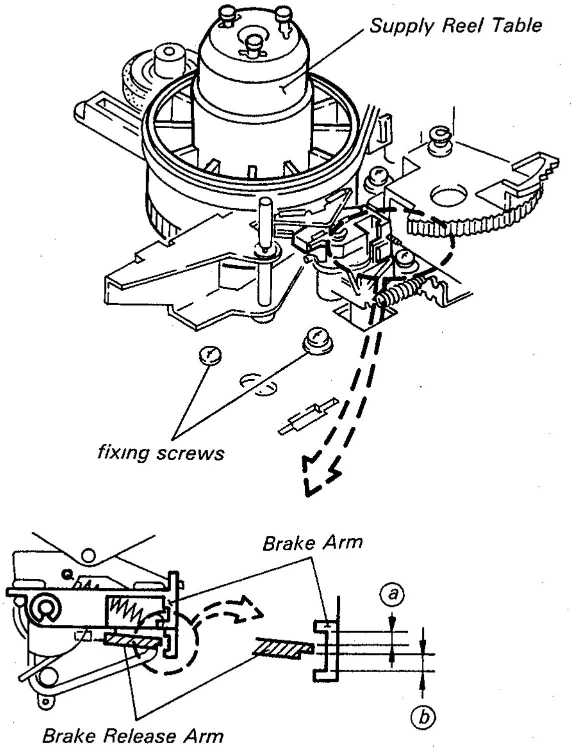
Mode: REW mode without cassette tape

Check procedure:

(1) Check that the positional relationship between the Brake Release Arm and the Brake Arm meets the required specification.

Adjustment procedure:

(1) Adjust the position of the S Brake Solenoid to meet the required specification.


Supply Reel Table
fixing screws
Brake Arm
ⓐ
ⓑ
Brake Release Arm

Spec..
There are clearance ⓐ and ⓑ

5-8. CASSETTE-UP COMPARTMENT ADJUSTMENT

The Cassette-up Compartment has two photo-electrical switches. The ON/OFF timing of these switches are adjusted as follows.
Remove the Cassette-up Compartment from the set in this adjustment.

5-8-1. Cassette-in Switch Position Adjustment

Tool: KCA type cassette tape
Circuit tester
Thickness gauge

Preparation:

(1) Connect the plug of the harness for Cassette-up Compartment and the terminal on the CC-22 Board with the jumper leads as follows;

plug of harness (CN1)	terminal on CC-22 Board
4 pin (5V)	4 pin/CN1
5 or 2 pin (GND)	5 or 2 pin/CN1

(2) Turn the power ON.

Check procedure:

(1) Connect the circuit tester to 1 terminal on CC-22 Board.

(2) Insert a KCA type cassette tape slowly.

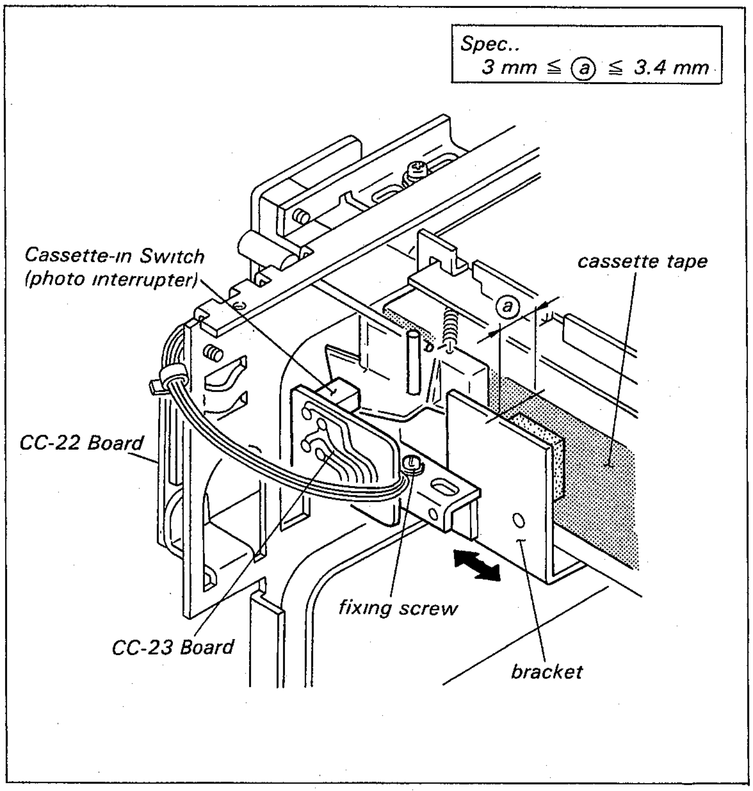
(3) When the circuit tester is turned "H" level (about 5V), check that the clearance between the front side of the cassette tape and the bracket of Cassette-up Compartment meets the required specification.

Adjustment procedure:

(1) Adjust the position of the cassette-in switch in the direction of the arrow to meet the required specification.

Adjusting procedure;

Insert a 3.3mm thick thickness gauge between the cassette tape and the bracket. Adjust the position of the cassette-in switch so that the circuit tester is turned to "H" in this position.


Spec..
$3\ mm \leqq ⓐ \leqq 3.4\ mm$

5-8-2. Cassette-down Switch Position Adjustment

Tool: Circuit tester

Preparation:

(1) Connect the plug of the harness for Cassette-up Compartment and the terminal on the CC-22 Board with the jumper leads as follows;

plug of harness (CN1)	terminal on CC-22 Board
4 pin (5V) ———	4 pin/CN1
5 or 2 pin (GND) ———	5 or 2 pin/CN1

(2) Turn the power ON.

Check procedure:

(1) Connect the circuit tester to 3 terminal on CC-22 Board.

(2) Turn the white colored gear on the right side of the Cassette-up Compartment in the clockwise direction.

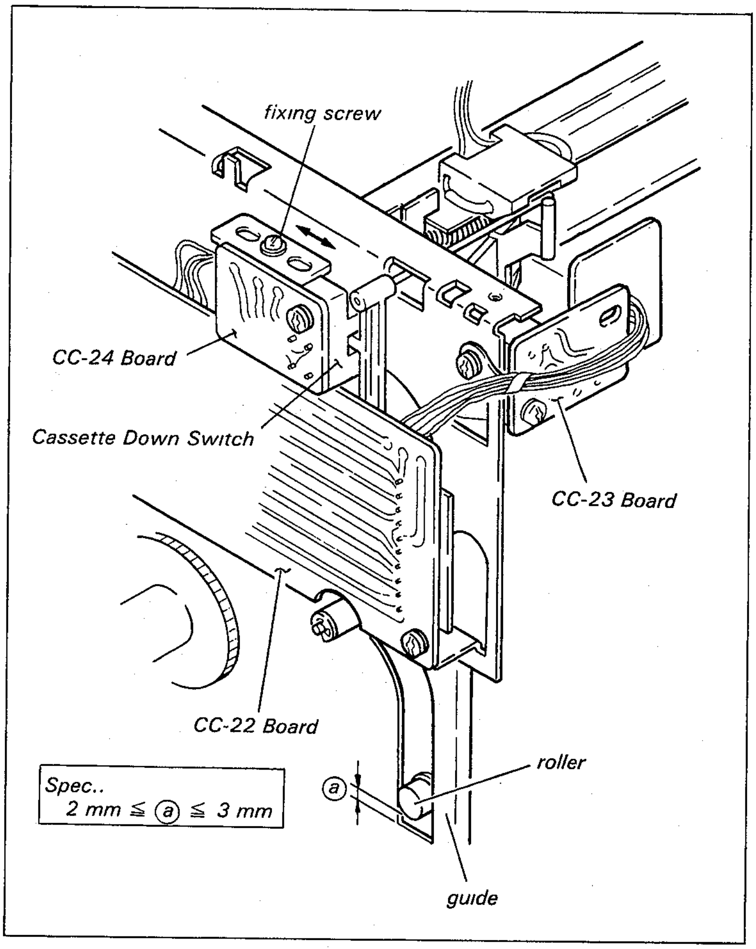
(3) Check that the clearance between the roller and the guide meets the required specificaiton.

Adjustment procedure:

(1) Adjust the position of the cassette-down switch in the direction of the arrow to meet the required specification.

Adjusting procedure;

Turn the gear on the right side so that the clearance between the roller and the guide is 2.2mm clearance. Adjust the position of the cassette-down switch so that the circuit tester is turned to "H" in this position.



5-9. LEAF SPRING POSITION ADJUSTMENT

Check procedure:

(1) Put the machine into the EJECT mode after put into the PLAY mode once.

(2) Turn the Gear Box Pulley with finger so that the edge of the T Drawer Arm is placed into the center of the shaft as shown in the figure.

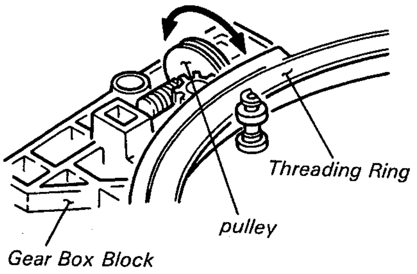
(3) Check that the clearance between the Leaf Spring and the Pinch Roller Shaft meets the required specificaiton (1).

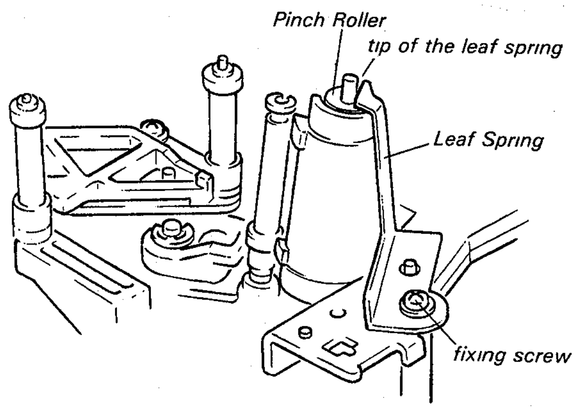
(4) Put the machine into the EJECT completion mode after put into the PLAY mode again.

(5) Check that the Leaf Spring touches the Pinch Roller Shaft, and the clearance between the Leaf Spring and the Pinch Roller meets the required specification (2).

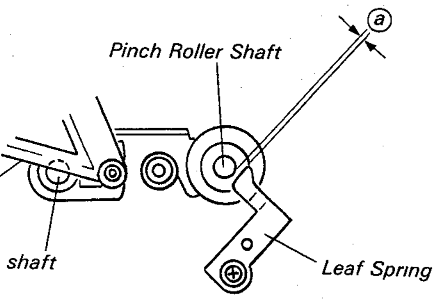
Adjustment procedure:

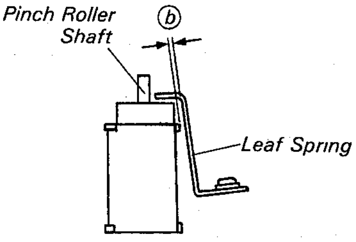
(1) Adjust the position of the Leaf Spring to meet the required specifications (1) and (2).


Threading Ring
pulley
Gear Box Block


Pinch Roller
tip of the leaf spring
Leaf Spring
fixing screw

Spec. 1
ⓐ ≦ 0.5 mm


ⓐ
Pinch Roller Shaft
T Drawer Arm
shaft
Leaf Spring


Pinch Roller Shaft
ⓑ
Leaf Spring

Spec. 2:
There is clearance ⓑ.

5-10. PINCH LEVER RIGHT ANGLE ADJUSTMENT

. This adjustment is precisely factory-calibrated before shipment so that no adjustment is required except the Pinch Lever and the Capstan Shaft replacement.

Mode: Unthreading end/POWER OFF

Tool: Flatness Plate

Check procedure:

(1) Remove the Pinch Roller Pre-Set Cam.

(2) Set the Flatness Plate to the Capstan Shaft as shown in the figure.

(3) Push the Pinch Lever in the direction of the arrow so that the Pinch Press Plate contact to the Flatness Plate.

(4) Check that the lower clearance of the Pinch Press Plate and the Flatness Plate meet the required specification.

Adjustment procedure:

(1) Loosen the two fixing screws of Pinch Press Adjusting Plate.

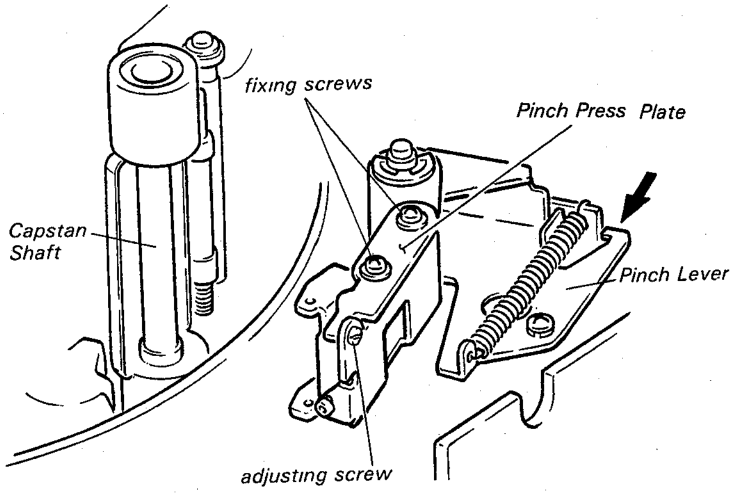
(2) When push the Pinch Lever in the direction of the arrow, adjust to meet the required specification with adjusting screw.

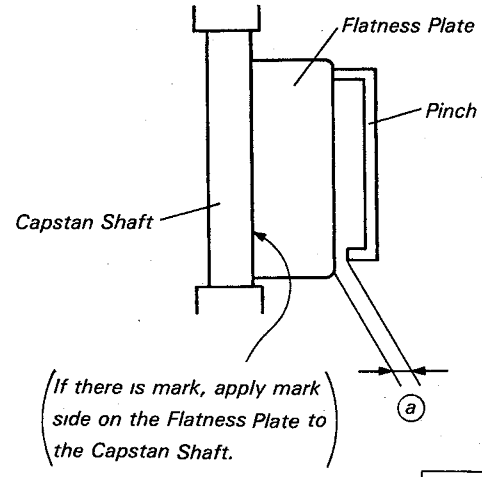
(3) After adjustment, tighten the two fixing screws of the Pinch Press Adjusting Plate.

(4) Turn the adjusting screw 1/2 turn in the clockwise direction.

(5) Check as check procedures.

(6) Apply a locking compound to the adjusting screw.


fixing screws
Pinch Press Plate
Capstan Shaft
Pinch Lever
adjusting screw


Flatness Plate
Pinch Press Plate
Capstan Shaft
ⓐ

(If there is mark, apply mark side on the Flatness Plate to the Capstan Shaft.)

Spec..
0 ≦ ⓐ ≦ 0.2 mm

SECTION 6

BACK TENSION AND TORQUE ALIGNMENT

6-1. BRAKE SYSTEM ADJUSTMENT

6-1-1. S Brake Torque Adjustment

Mode: EJECT completion/the power OFF

Tool: Reel table torque measurement tape (100mm dia.)
Tension scale (200g full scale)

Check procedure:

(1) Grasp the top of the Supply Reel Table with finger. Check that the clearance between the Brake Arm and the Lining Holder meets the required specification (1) as shown in the figure as it is turned clockwise direction approx. 30 degrees.

(2) Install the jig tape on the Supply Reel Table and hook a tension scale on an end of the jig tape. Pull out the tape at the constant speed of approx. 9.5cm/sec. in the direction of the arrow. Check that the scale reading meets the required specification (2).

Adjustment procedure:

For Spec. (1)

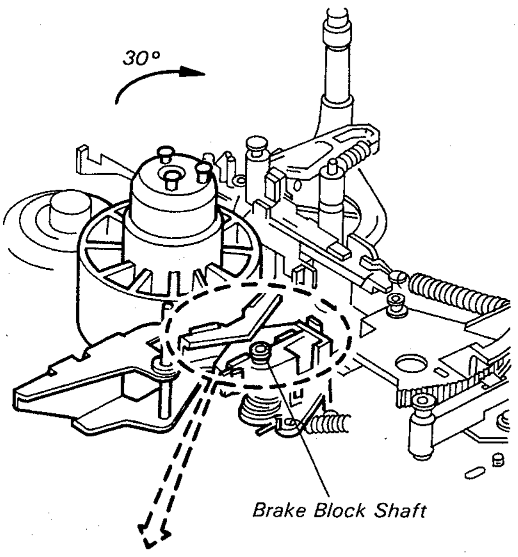
(1) Bend the Brake Block Shaft toward the Reel Table or the opposite direction with finger.

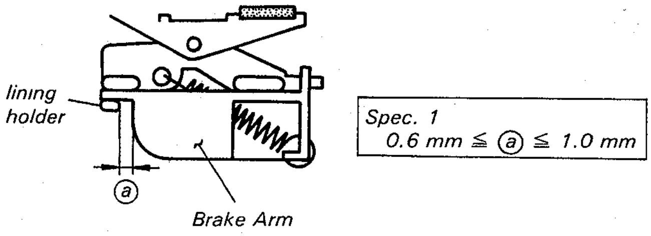
For Spec. (2)

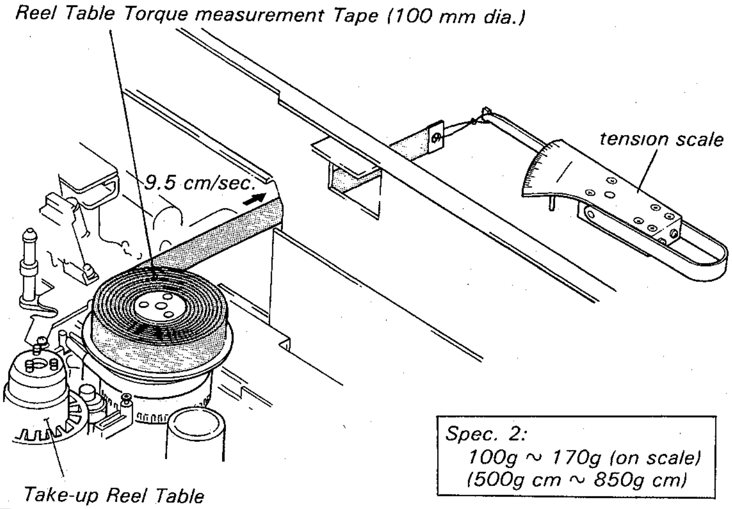
(2) Clean the surface of the Reel Table with cloth moistened with cleaning fluid.

(3) If does not meet the specification (2), replace the Lining Holder and check again.

(4) If does not meet the specification in Step (3), replace the Reel Table and check again.


30°
Brake Block Shaft


lining holder
ⓐ
Brake Arm
Spec. 1
0.6 mm ≦ ⓐ ≦ 1.0 mm


Reel Table Torque measurement Tape (100 mm dia.)
9.5 cm/sec.
tension scale
Take-up Reel Table
Spec. 2:
100g ∼ 170g (on scale)
(500g cm ∼ 850g cm)

6-1-2. T Brake Torque Adjustment

Mode: EJECT completion/the power OFF

Tool: Reel table torque measurement tape (100mm dia.)
Tension scale (200g full scale)

Check procedure:

(1) Grasp the top of the Take-up Reel Table with finger. Check that the clearance between the Brake Arm and the Lining Holder meets the required specification (1) as shown in the figure as it is turned clockwise direction approx. 30 degrees.

(2) Install the jig tape on the Take-up Reel Table and hook a tension scale on an end of the jig tape. While pushing the T Tension Regulator Arm to the left as far as it will go, pull out the tape at the constant speed of approx. 9.5cm/sec. in the direction of the arrow. Check that the scale reading meets the required specification (2).

Adjustment procedure:

For Spec. (1)

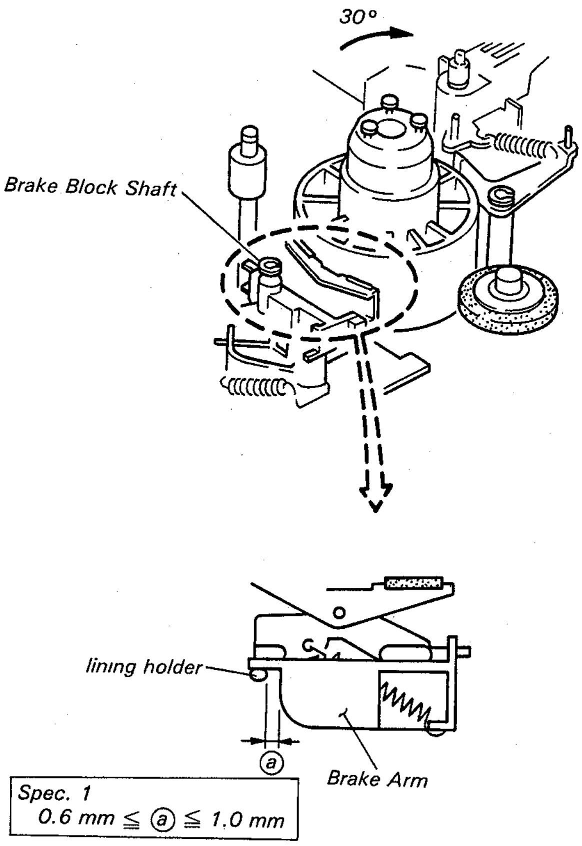
(1) Bend the Brake Block Shaft toward the Reel Table or the opposite direction with finger.

For Spec. (2)

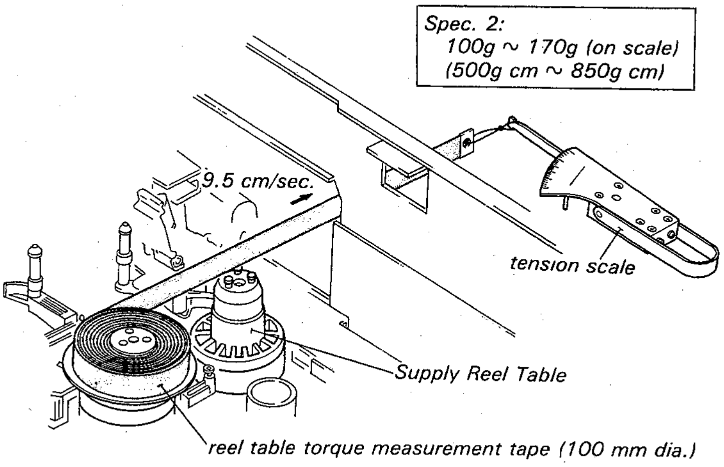
(2) Clean the surface of the Reel Table with cloth moinstened with cleaning fluid.

(3) If does not meet the specification (2), replace the Lining Holder and check again.

(4) If does not meet the specification in Step (3), replace the Reel Table and check again.


30°
Brake Block Shaft
lining holder
ⓐ
Brake Arm

Spec. 1
0.6 mm ≦ ⓐ ≦ 1.0 mm


9.5 cm/sec.
tension scale
Supply Reel Table
reel table torque measurement tape (100 mm dia.)

Spec. 2:
100g ~ 170g (on scale)
(500g cm ~ 850g cm)

6-1-3. REW Brake Torque Adjustment

Mode: REW mode

Tool: Reel table torque measurement tape (100mm dia.)
Tension scale (50g full scale)

Check procedure:

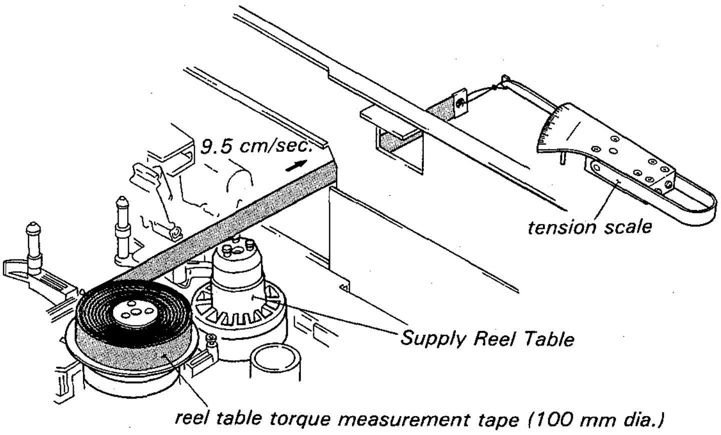
(1) Install the jig tape on the Take-up Reel Table and hook a tension scale on an end of the jig tape.

(2) Put the machine into the REW mode. Pull out the tape at the constant speed of approx. 9.5cm/sec. in the direction of the arrow. Check that the scale reading meets the required specification.

Adjustment procedure:

(1) If does not meet the specification, replace the R Brake Ass'y and check again.

(2) If does not meet the specification in Step (1), replace the Reel Table and check again.


9.5 cm/sec.
tension scale
Supply Reel Table
reel table torque measurement tape (100 mm dia.)

Spec.:
18g ∼ 36g (on scale)
(90g · cm ∼ 180g · cm)

6-2. FF/REW TORQUE ADJUSTMENT

. It is required that the Section 5-7-2. T Idler Solenoid Position Adjustment and Section 5-7-3. S Idler Solenoid Position Adjustment are checked to be correct or properly adjusted before initiating this adjustment.

Mode: FF and REW modes

Tool: Reel table torque measurement tape (100mm dia.)

Tension scale (500g full scale)

Check procedure:

FF Torque

(1) Install the jig tape on the Take-up Reel Table and hook a tension scale on an end of the tape. Pull out the tape.

(2) Put the machine into the FF mode. Let the tape pulled at the constant speed of approx. 9.5cm/sec. Check that the scale reading meets the required specification.

REW Torque

(3) Install the jig tape on the Supply Reel Table and hook a tension scale on an end of the tape. Pull out the tape.

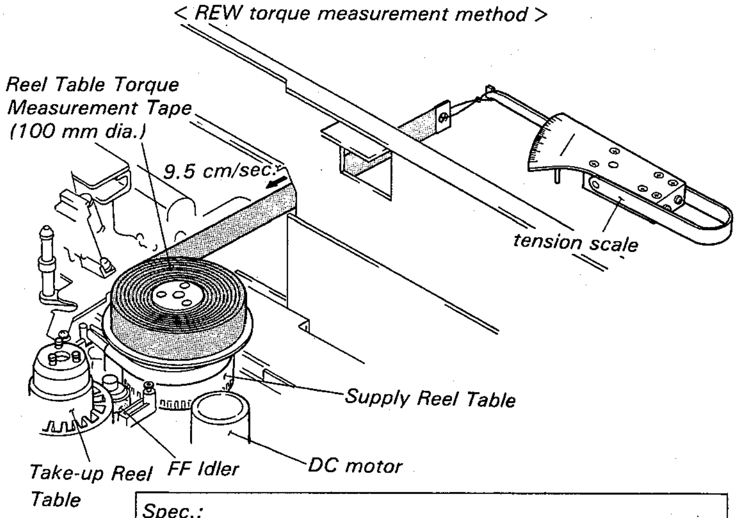
(4) Put the machine into the REW mode. Let the tape pulled at the constant speed of approx. 9.5cm/sec. Check that the scale reading meets the required specification.

Adjustment procedure:

Both FF Torque and REW Torque are adjusted by the following adjustment procedures.

(1) Clean the surface of the Reel Table, FF idler and belt with cloth moistened with cleaning fluid. Check the torque again.

< REW torque measurement method >



Spec.:
FF Torque and REW Torque higher than 300g (on scale) (higher than 1500g · cm)

(2) If the Step (1) is out of specification, put the machine into FF or REW mode without cassette tape and check that the dc voltage at the terminals of dc motor is 10.5 ± 1.5V in FF or REW mode. If the dc voltage is out of specification, check that the circuit operation of SY Board operates correctly.

(3) If does not meet the specification in Steps (1) and (2), replace the Reel Table, FF idler and belt.

6-3. FWD TORQUE ADJUSTMENT

Mode: 1/2 FWD SEARCH mode

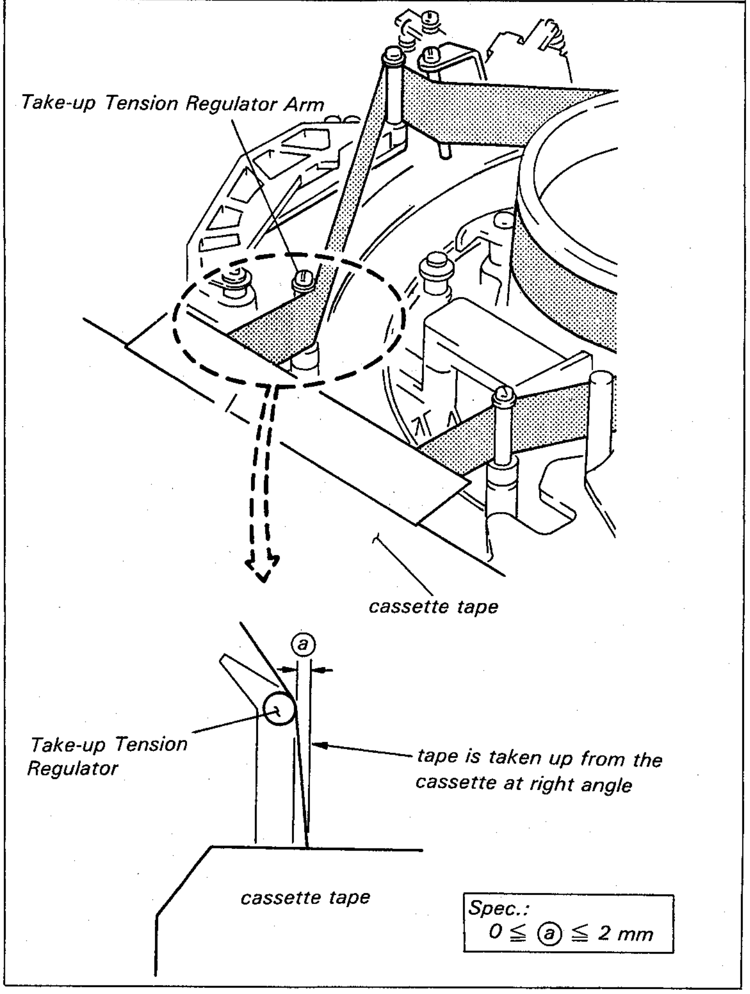
Check procedure:

(1) Install the KCS-20 cassette tape at the tape end portion.

(2) Short between TP18 and GND on the SV-74B Board with the shorting clip. Put the machine into the FWD SEARCH mode. Check that the positional relationship between the T Tension Regulator Arm and cassette tape meets the required specification.

Adjustment procedure:

(1) Adjust RV3 on the SY-51 Board meets the required specification in FWD mode.


Take-up Tension Regulator Arm
cassette tape
ⓐ
Take-up Tension Regulator
tape is taken up from the cassette at right angle
cassette tape
Spec.:
0 ≦ ⓐ ≦ 2 mm

6-4. REV TORQUE ADJUSTMENT

Mode: 1/2 REV SEARCH mode

Check procedure:

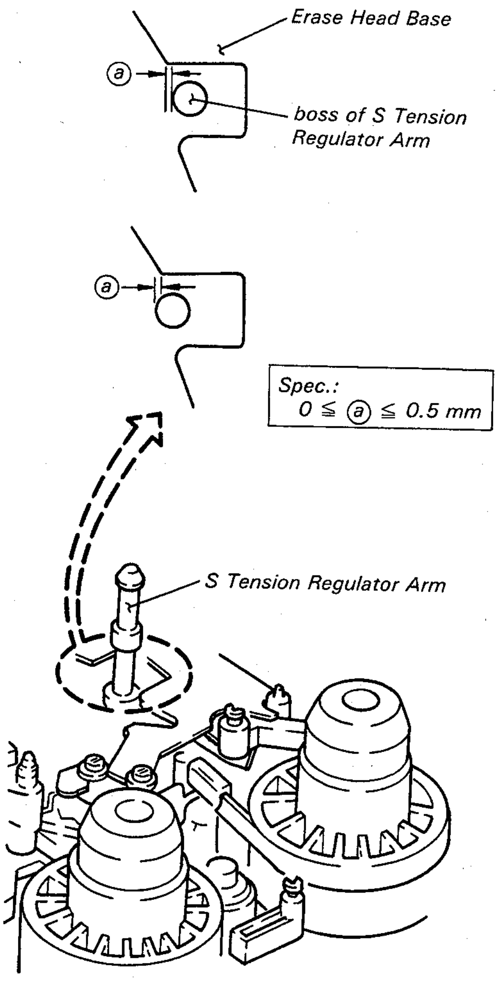
(1) Install the KCA-60 cassette tape at the tape beginning portion.

(2) Short between TP18 and GND on the SV-74B Board with the shorting clip. Put the machine into the REV SEARCH mode.

(3) Check that the relationship between the boss of the S Tension Regulator and the bracket of Erase Head Base meets the required specification.

Adjustment procedure:

(1) Adjust RV2 on the SY-51 Board meets the required specification.


Erase Head Base
ⓐ
boss of S Tension Regulator Arm
ⓐ
S Tension Regulator Arm

Spec.:
$0 \leqq ⓐ \leqq 0.5$ mm

6-5. FF BACK TENSION ADJUSTMENT

- It is required that the Section 5-6-3. Supply Tension Regulator Operating Position Adjustment is checked to be correct or properly adjusted before initiating this adjustment.
- It is required that the Section 6-6. FWD Back Tension Adjustment is performed after this adjustment.

Tool: Back tension adjustment jig
Reel table torque measurement tape (100mm dia.)
Tension scale (50g full scale)

Preparation:

(1) Turn the power ON in FR-STOP mode. (When the power ON, the S Drawer Roller moves to the FR-STOP position and put the machine into FR-STOP mode automatically.)

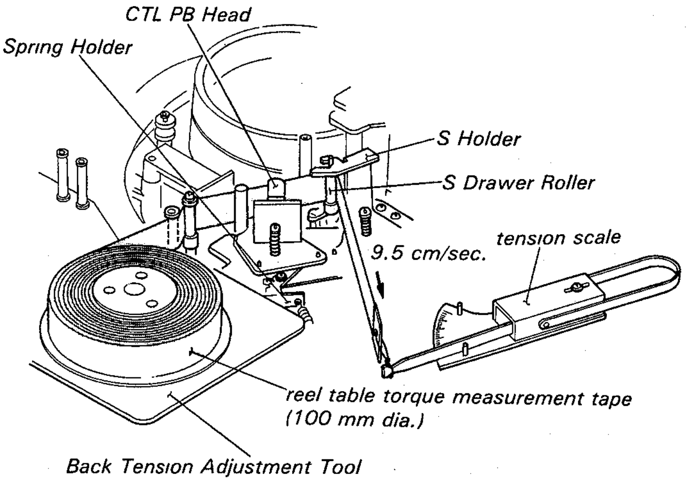
(2) Turn the Pulley of Gear Box Block in the clockwise direction viewing from the Front Panel with finger so that the S Drawer Roller places in front of the CTL PB Head.

(3) Install the Back Tension Adjustment Jig.

(4) Install the jig tape on the Supply Reel Table and install the tape as shown in the figure. Check that the tape does not curl at the flange of S Drawer Roller.

(5) Turn the Pulley in opposite direction in Step (2) so that the S Drawer Roller is engaged with the S Holder.

(6) Hook a tension scale on an end of tape.



Spec..
40g ∼ 47g
(on scale)

Check procedure:

(1) Press the FF button and put into FF mode.

(2) Pull out the tape at the constant speed of approx. 9.5cm/sec. in the direction of the arrow. Check that the scale reading meets the required specification.

Adjustment procedure:

(1) Adjust the position of the Spring Holder meets the required specification with flatblade screwdriver, 3mm dia..

(2) After adjustment, perform as check procedures again.

(3) Perform the Section 6-6. FWD Back Tension Adjustment.

6-6. FWD BACK TENSION ADJUSTMENT

. It is required that the Section 5-6-3. Supply Tension Regulator Operating Position Adjustment and the Section 6-5. FF Back Tension Adjustment are checked to be correct or properly adjusted before initiating this adjustment.

Tool: Back tension adjustment jig
Reel table torque measurement tape (100mm dia.)
Tension scale (100g full scale)

Preparation:

(1) Push the Skew Lock Arm in the direction of the arrow.

(2) Turn the power ON, put the machine into the FR-STOP mode. (When turn the power ON, the S Drawer Roller moves to the FR-STOP position and put the machine into the FR-STOP mode automatically.)

(3) Turn the pulley of Gear Box Block in the clockwise direction viewing from the Front Panel with finger so that the S Drawer Roller places in front of the CTL PB Head.

(4) Install the Back Tension Adjustment Jig.

(5) Install the jig tape on the Supply Reel Table and install the tape as shown in the figure. Check that the tape does not curl at the flange of S Drawer Roller.

(6) Turn the Pulley in opposite direction in Step (3) so that the S Drawer Roller is engaged with the S Holder.

(7) Hook a tension scale on an end of tape.

Check procedure:

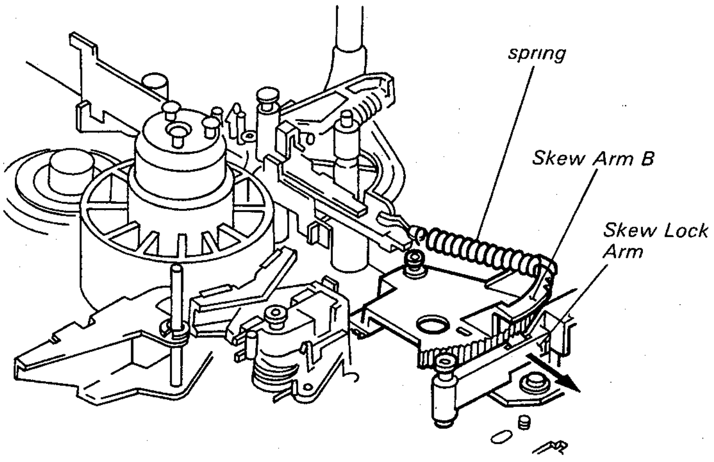
(1) Press the PLAY button and put into PLAY mode.

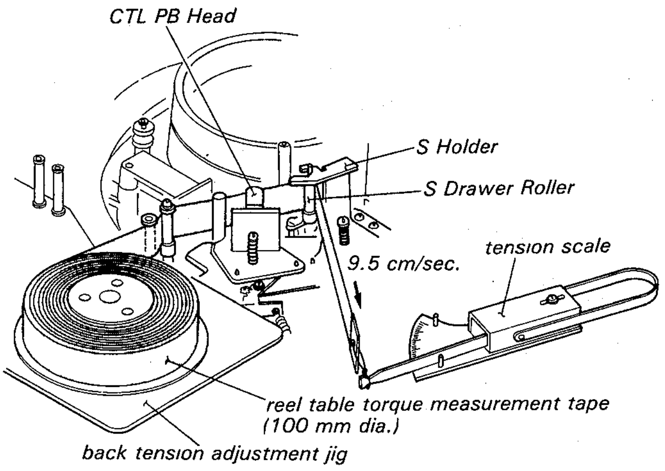
(2) Pull out the tape at the constant speed of approx. 9.5cm/sec. in the arrow direction. Check that the scale reading meets the required specification.

Adjustment procedure:

(1) Adjust the position of the proper spring hook of the Skew Arm B to meet the required specification.

(2) After adjustment, perform as check procedures again.





Spec..
70g ~ 75g (on scale)

SECTION 7

TAPE RUN ALIGNMENT

7-1. FF/REW MODES TAPE PATH ADJUSTMENT

Mode: FF and REW modes

Check procedure:

(1) Install KCA-60 cassette tape (use the middle portion of the tape). Put the machine into REW mode.

(2) Observe the surface of the running tape very carefully around T Drawer Arm. Check that the tape tension is exactly equal at the tape top and tape bottom. (Spec.1)

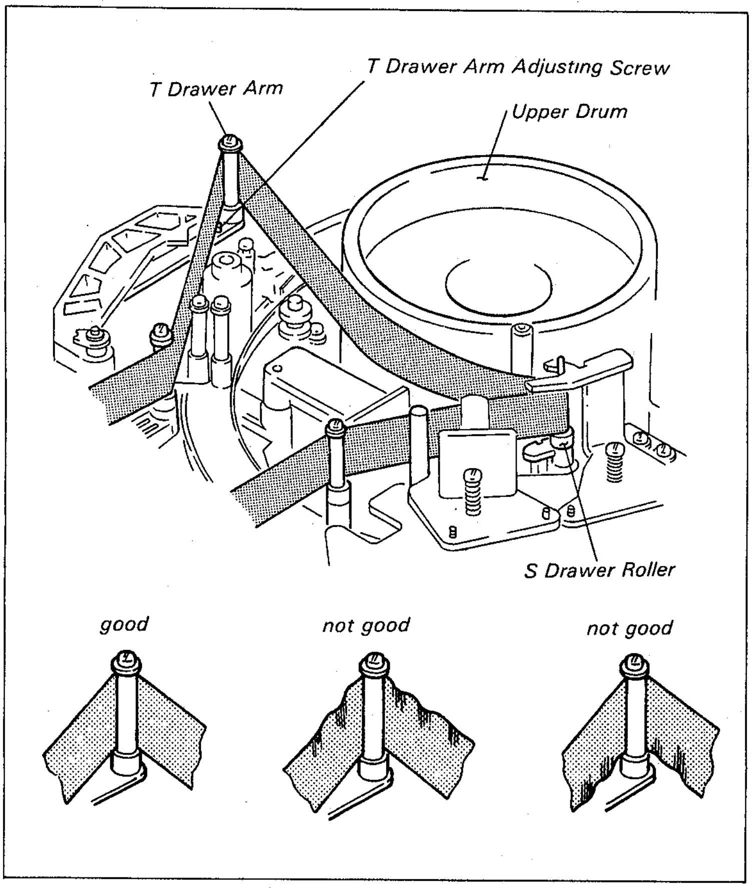
(3) Check that the tape runs without curl at the upper or lower flange of S Drawer Roller in the REW mode. (Spec.2)

(4) Put the machine once into the STOP mode, and put into the REW mode. Check that the tape runs without curl at the S Drawer Roller in the moment of just after the REW mode. (Spec.3)

(5) Put the machine into FF mode. Check that the tape runs without curl at the S Drawer Roller and T Drawer Arm in the moment of just after the FF mode. (Spec.4)

Adjustment procedure:

(1) Adjust the slantness of T Drawer Arm by turning the T Drawer Arm Adjusting Screw.



7-2. T CORRECTION GUIDE SLANTNESS ADJUSTMENT

Check procedure:

(1) Install KCA-60 cassette tape, and put the machine into the FR-STOP mode.

(2) Press the PLAY button. The threading operation starts. Turn the power OFF when the Pinch roller is pathed in front of the T Correction Guide.

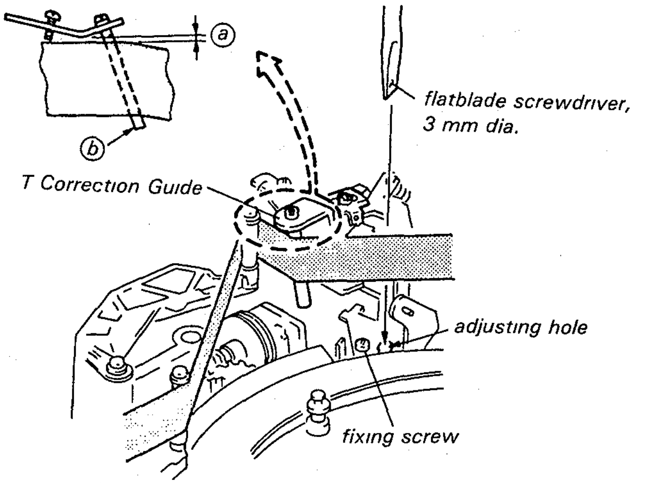
(3) Check that the clearance between the tape top edge and the upper bracket of T Correction Guide meets the required specification.

Adjustment procedure:

(1) Adjust the position of the T Correction Guide with flatblade screwdriver, 3mm dia. meets the required specification.

(2) After adjustment, perform the Section 7-3. FWD Mode Tape Path Adjustment (1).

Spec..
- *0.1 mm ≦ ⓐ ≦ 1.5 mm*
- *T Correction Guide is visible from the bottom edge of tape at ⓑ portion.*



7-3. FWD MODE TAPE PATH ADJUSTMENT (1)

- It is required that the Section 7-2. T Correction Guide Slantness Adjustment and Section 7-1. FF/REW Modes Tape Path Adjustment are checked to be correct or properly adjusted before initiating this adjustment.

Mode: FWD mode

Check procedure:

(1) Install KCA-60 cassette tape (after the KCA-60 tape has run after 30 minutes). Put the machine into FWD mode.

(2) Check that the tape runs without curl at the upper or lower flange of the T Drawer Arm. (Spec.1)

(3) Check that the tape tension is exactly equal at the tape top and tape bottom, and the tape runs without curl at the lower flange of the T Drawer Arm. (Spec.2)

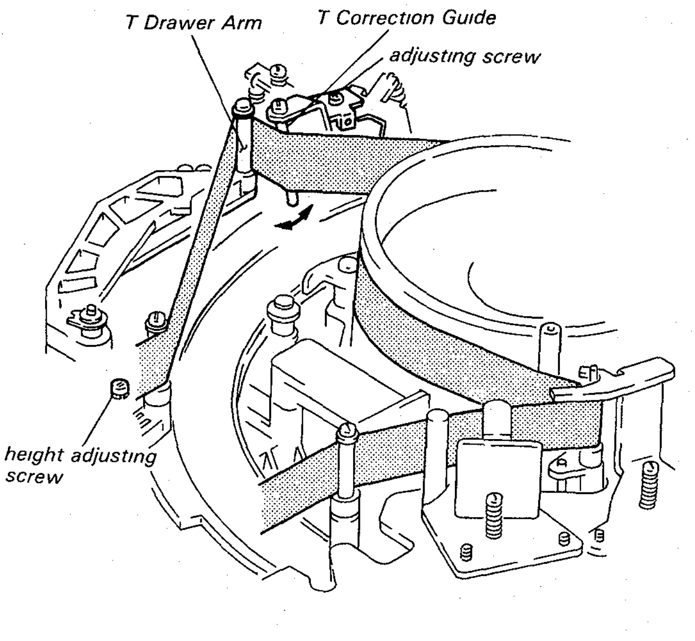
Adjustment procedure:

For Spec.1

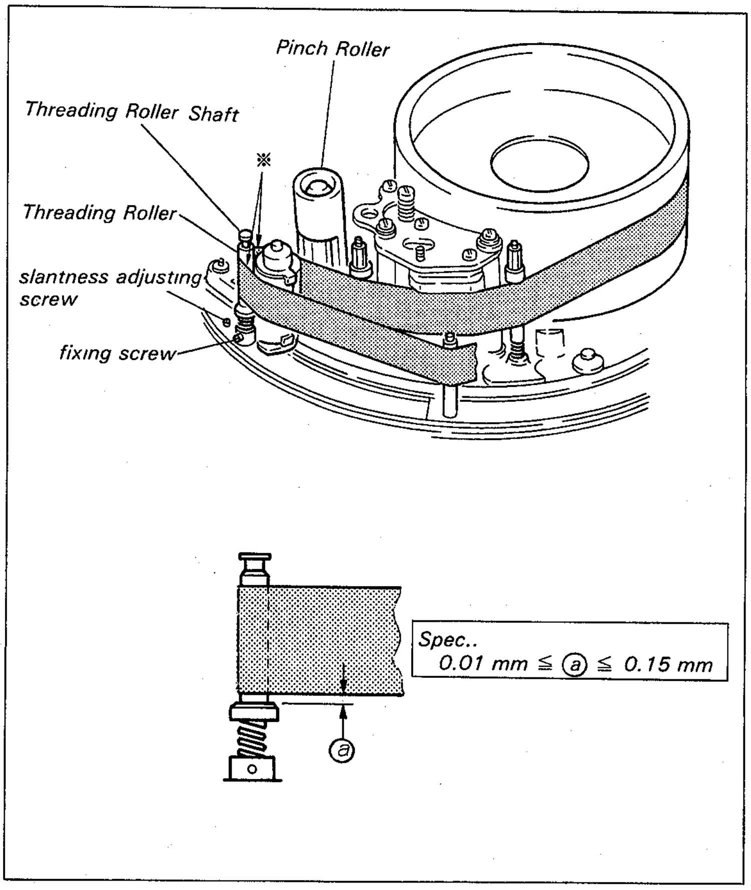
(1) Adjust the height of the T Drawer Arm by turning the T Drawer Arm Height Adjusting Screws.

For Spec.2

(2) Adjust the T Correction Guide in the arrow direction by adjusting screw.



7-4. FWD MODE TAPE PATH ADJUSTMENT (2)


Pinch Roller
Threading Roller Shaft
※
Threading Roller
slantness adjusting screw
fixing screw
Spec..
0.01 mm ≦ ⓐ ≦ 0.15 mm
ⓐ

Mode: FWD mode

Check procedure:

(1) Install KCA-60 cassette tape (use the middle portion of the tape). Put the machine into FWD mode.

(2) Check to see carefully two positions indicated by the ※ mark in the figure, check that the tape tension is exactly equal at the tape top and tape bottom. (Spec.1)

(3) Check that the clearance between the lower flange of Threading Roller and the tape bottom edge meets the required specification (2).

Adjustment procedure:

(1) Loosen the fixing screw in the bottom of the Threading Roller as shown in the figure.

For Spec.1

(2) Adjust the slantness of the Threading Roller by turning the slantness adjusting screw.

For Spec.2

(3) Adjust the height of the Threading Roller by turning the Threading Roller Shaft.

(4) Check that the slantness and height meet the required specification (1) and (2) again.

7-5. REV MODE TAPE PATH ADJUSTMENT

Check procedure:

(1) Install KCA-60 cassette tape (use the middle portion of the tape).

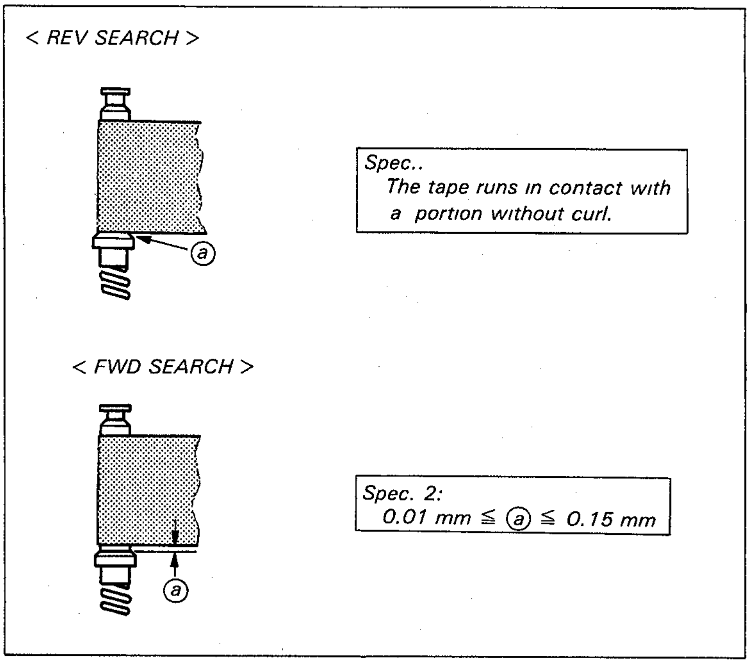
(2) Put the machine into REV SEARCH mode. Check that the tape runs in contact with the lower flange of the Threading Roller without curl.

(3) Put the machine into FWD SEARCH mode. Check that the clearance between the lower flange of the Threading Roller and the tape bottom edge meets the required specification and the tape does not curl at the lower or upper flange of TG-4.

Adjustment procedure:

(1) Fine adjust the height of the Threading Roller by turning the Threading Roller Shaft.

(2) After adjustment, perform the Section 7-4. FWD Mode Tape Path Adjustment (2).



< REV SEARCH >

Spec..
The tape runs in contact with a portion without curl.

< FWD SEARCH >

Spec. 2:
0.01 mm ≦ ⓐ ≦ 0.15 mm

7-6. TAPE PATH ADJUSTMENT AROUND PINCH ROLLER

Check procedure:

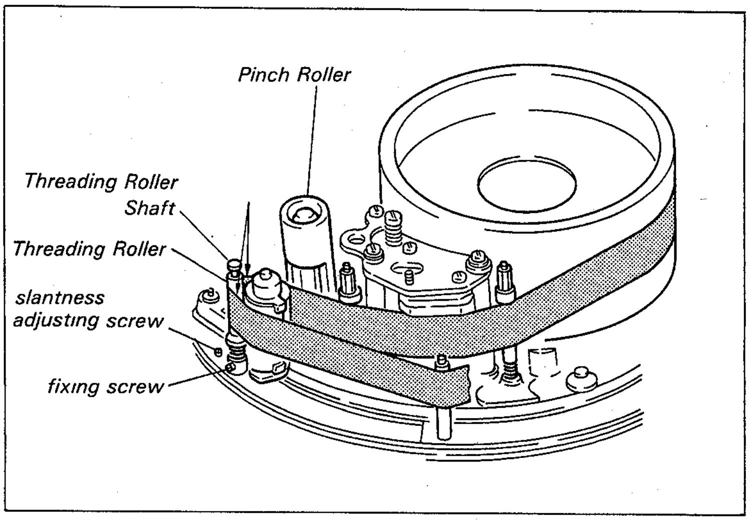
(1) Install the KCA-60 cassette tape at the tape beginning portion.

(2) Put the machine into PLAY, REV SEARCH, FWD SEARCH modes. Check that the tape wrinkle does not appear, or disappear within 2 sec. when the tape runs toward the specified direction in these modes.

Adjustment procedure:

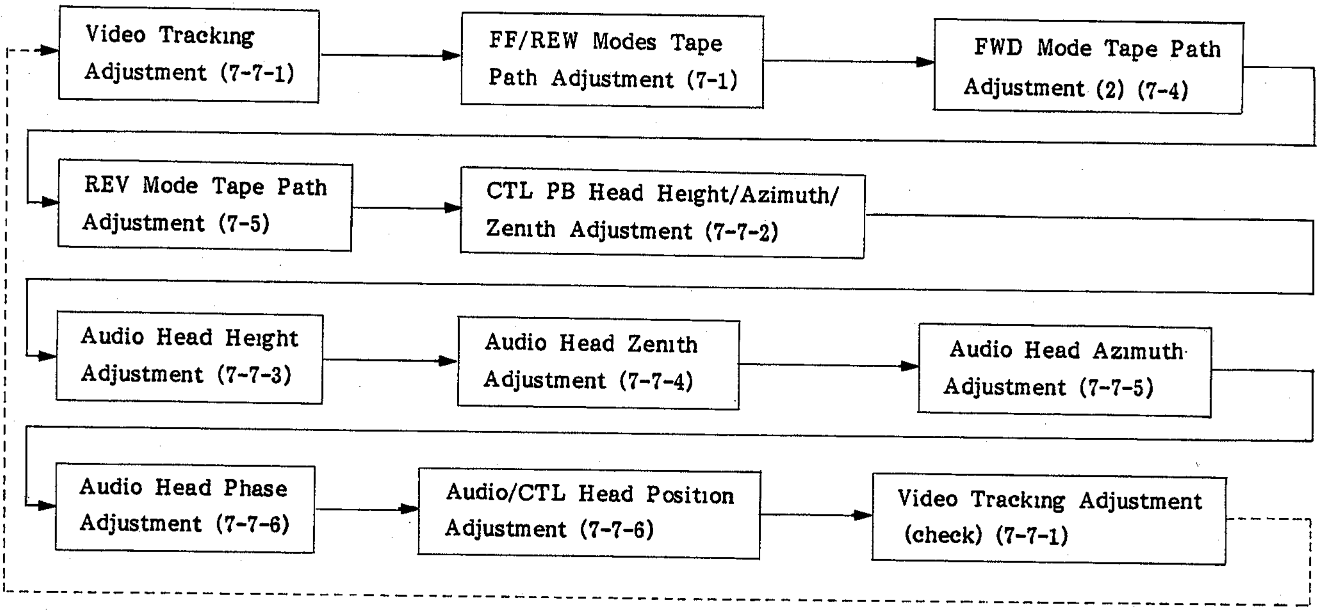
(1) Adjust the slantness and height of the Threading Roller meets the required specification.

(2) After adjustment, perform the Section 7-4. FWD Mode Tape Path Adjustment (2), Section 7-5. REV Mode Tape Path Adjustment, Section 7-7. Tracking Adjustment.


Pinch Roller
Threading Roller Shaft
Threading Roller
slantness adjusting screw
fixing screw

7-7. TRACKING ADJUSTMENT

- The tracking adjustment is required to be performed as following Steps.


Video Tracking Adjustment (7-7-1)
FF/REW Modes Tape Path Adjustment (7-1)
FWD Mode Tape Path Adjustment (2) (7-4)
REV Mode Tape Path Adjustment (7-5)
CTL PB Head Height/Azimuth/ Zenith Adjustment (7-7-2)
Audio Head Height Adjustment (7-7-3)
Audio Head Zenith Adjustment (7-7-4)
Audio Head Azimuth Adjustment (7-7-5)
Audio Head Phase Adjustment (7-7-6)
Audio/CTL Head Position Adjustment (7-7-6)
Video Tracking Adjustment (check) (7-7-1)

7-7-1. Video Tracking Adjustment

Tool: Alignment tape, RR5-3SA
Flatness plate
Oscilloscope

Preparation:

(1) Connect the oscilloscope to TP1 on the VA-35B Board and TP2 on the VA-35B Board.

(2) Playback the color-bar signal portion of the alignment tape.

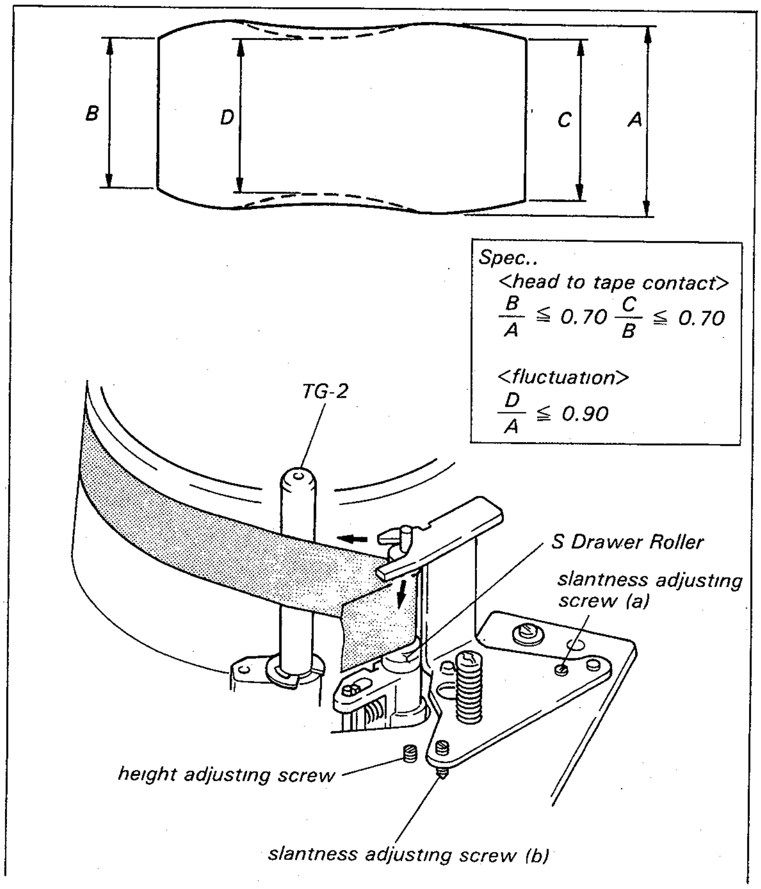
Check procedure:

(1) When turn the TRACKING control knob, check that the RF waveform maintains a flat envelope while amplitude increase and decrease.

(2) Check that the RF envelope fluctuation and head-to-tape contact are within the specification at the center detent position of the TRACKING control knob.

Adjustment procedure:

- S Drawer Roller Block has three adjusting screws. These three adjusting screws functions as follows;


B
D
C
A
TG-2
S Drawer Roller
slantness adjusting screw (a)
height adjusting screw
slantness adjusting screw (b)

Spec..
<head to tape contact>
$\frac{B}{A} \leqq 0.70 \quad \frac{C}{B} \leqq 0.70$

<fluctuation>
$\frac{D}{A} \leqq 0.90$

(i) Slantness Adjusting Screw (a)

Turn this screw in the clockwise direction, the upper portion of the S Drawer Roller slants in the direction of the arrow "A".

(ii) Slantness Adjusting Screw (b)

Turn this screw in the counterclockwise direction, the upper portion of the S Drawer Roller slants in the direction of the arrow "B".

(iii) Heigh Adjusting Screw

Turn this screw in the clockwise direction, makes the height of the S Drawer Roller lower.

. When the drum exit side tape guides (TG-3, TG-4) adjustment are performed, loosen the locking screw about 1 turn and adjust the height by turning the height adjusting nut.

. When the tracking a the drums entrance side is not good.

(1) Turn the TRACKING control knob so that the RF envelope amplitude is made to 70 to 80 % of the maximum amplitude.

(2) Adjust height and slantness of the S Drawer Roller by turning the height adjusting screw and slantness adjusting screw (a) so that RF envelope of entrance side is flat.

NOTE:

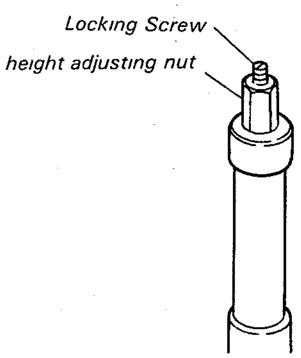
(i) Observe the surface of the running tape very carefully around the S Drawer Roller. Check that the tape tension is exactly equal at the tape top and tape bottom.

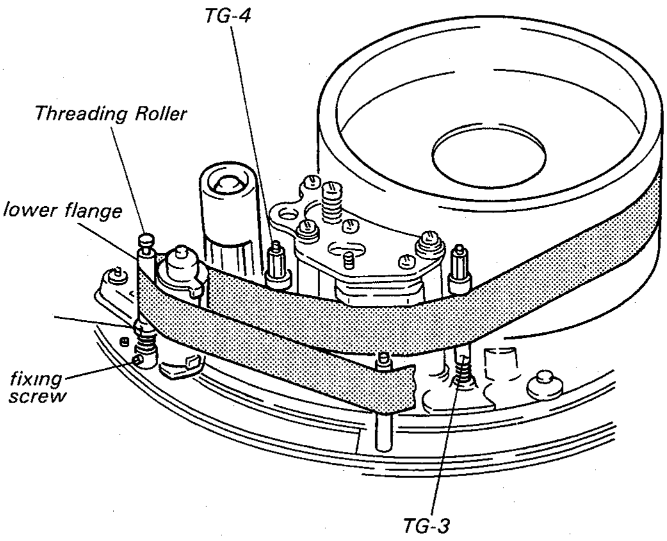
(ii) Check that the tape runs in contact with the upper flange of the S Drawer Roller without tape curl.

. When the tracking at the drum's center portion is not good, it is required that the drum's input side tracking adjustment to be correctly adjusted before initiating this adjustment.

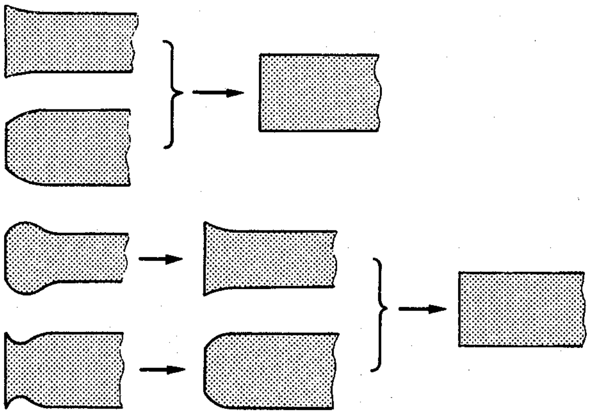
(3) Turn the TRACKING control knob so that the RF envelope amplitude is made to 70 to 80% of the maximum amplitude.

TG-3
TG-4





< drum entrance side >



(4) Adjust height and slantness of the S Drawer Roller by turning the height adjusting screw and slantness adjusting screw (a) so that the RF envelope at the drum center portion is flat.

NOTE:

- (i) Adjust the slantness adjusting screw (a) in the clockwise direction within 10 degrees.
- (ii) When the drum's center portion tracking adjustment performs, the drum entrance side tracking must maintain to flat.
- (iii) Check that the tape runs in contact with the upper flange of the S Drawer Roller without tape curl.

(5) When the RF envelope is not flat in Step (4), adjust height of TG-3 and TG-4.

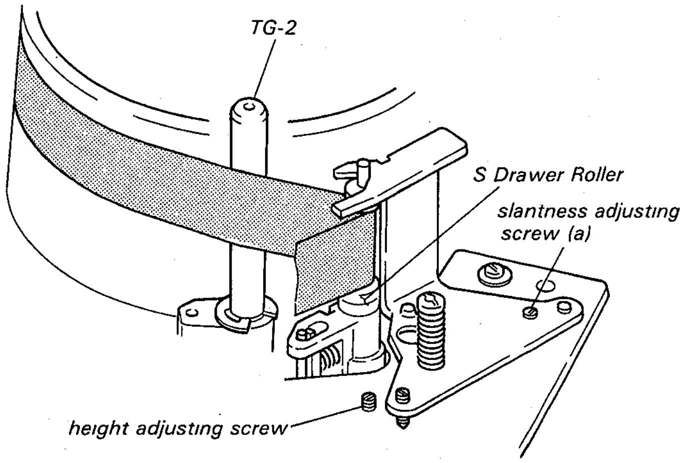
(6) When the RF envelope is not flat in Steps (4) and (5), adjust zenith of the Audio/CTL Head within the allowable range. Adjust height of TG-3 and TG-4 again.

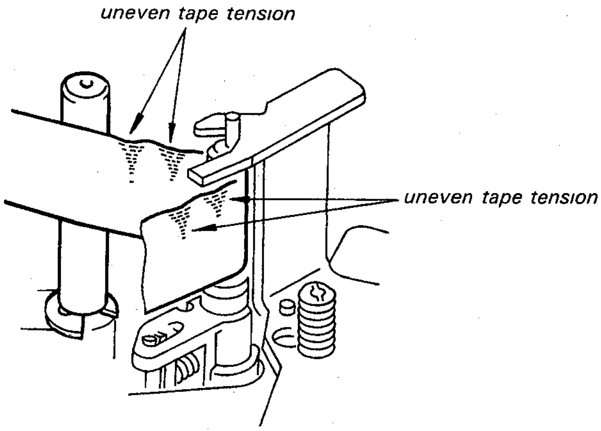
(7) Check that the clearance between the tape bottom edge and the lower flange of the Threading Roller is 0.01mm to 0.15mm clearance. If it dose not, perform height adjustment of the Threading Roller by turning the Threading Roller Shaft.

- When the tracking at the drum's exit side is not good.

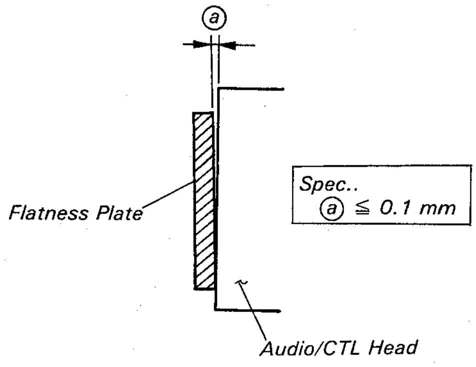
(8) Turn the TRACKING control knob so that the RF envelope amplitude is made to 70 to 80% of the maximum amplitude.

(9) When the RF envelope is not flat as shown in the figure 1, adjust height of TG-4 so that the RF envelope is flat. After this adjustment, adjust height of TG-3 so that the tape runs in contact with upper flange. When the RF envelope is not flat as shown in the figure 2, adjust height of TG-3 and TG-4 so that the RF envelope is flat. If it does not, adjust the zenith of the Audio/CTL





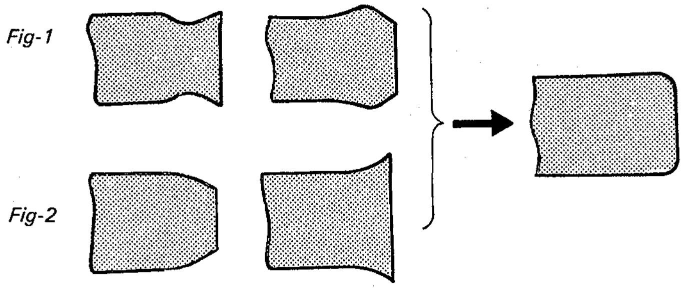
< zenith adjusting for audio/CTL head >

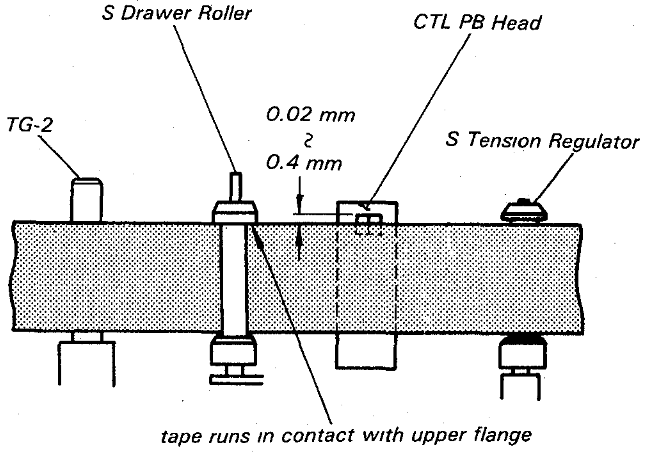


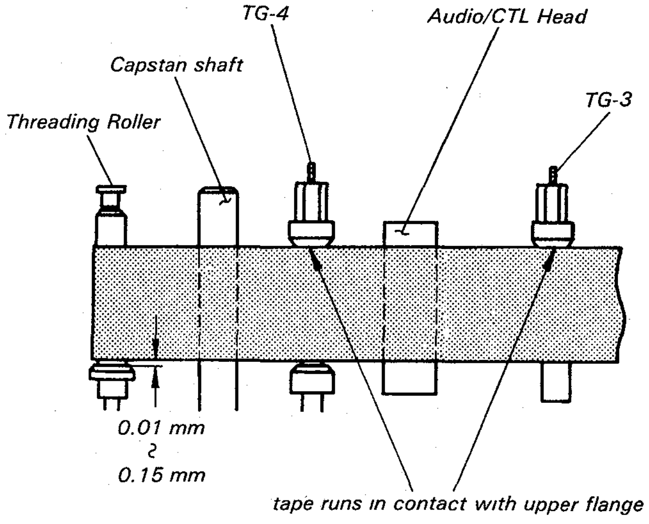
Head within the allowable range. Adjust the height of TG-3 and TG-4 again.

(10) Check that the clearance between the tape bottom edge and the lower flange of Threading Roller is 0.01mm to 0.15mm clearance. If it does not, perform height adjustment of Threading Roller by turning the Threading Roller Shaft.

< drum exit side >




S Drawer Roller
CTL PB Head
TG-2
0.02 mm
~
0.4 mm
S Tension Regulator
tape runs in contact with upper flange


TG-4
Audio/CTL Head
Capstan shaft
TG-3
Threading Roller
0.01 mm
~
0.15 mm
tape runs in contact with upper flange

7-7-2. CTL PB Head Height/Azimuth/Zenith Adjustments

CTL PB Head Height, Azimuth, and Zenith Adjustments are closely related. If any one of these three adjustments is attempted, perform the reset of two adjustments at the same time.

Tool: Flatness plate

Check procedure:

(1) Check that at the top and bottom clearances between the CTL PB Head and the TG-1 meets the required specification. (Spec.2 : azimuth check)

(2) Check that the clearance between the CTL PB Head and Flatness Plate meets the required specification, when the flatness plate set on the CTL PB Head and TG-1. (Spec.3 : zenith check)

(3) Install a cassette tape, put the machine into FWD mode.

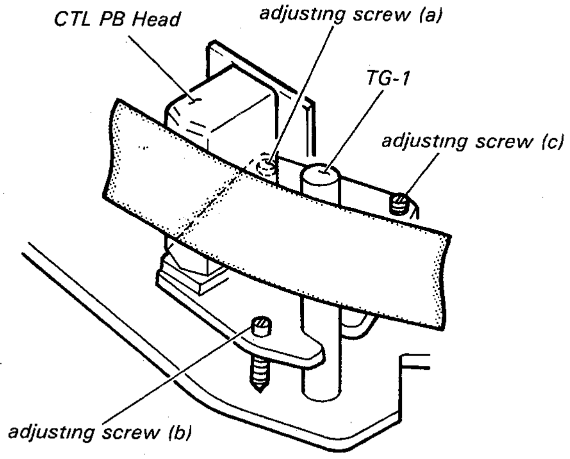
(4) Check that the relationship between the top edge of tape and CTL PB Head meets the required specification. (Spec.1 : height check)

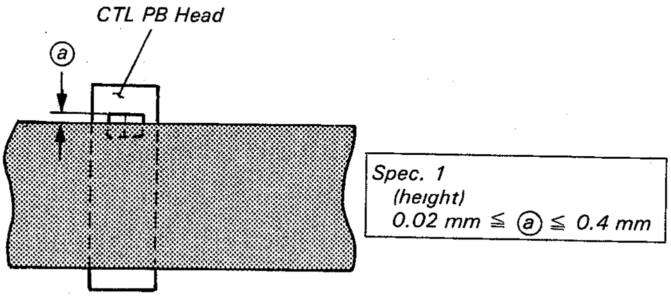
Adjustment procedure:

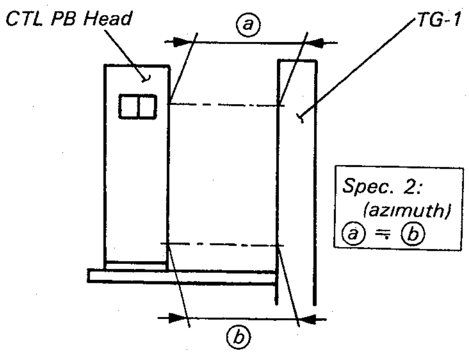
(1) Adjust the adjusting screw (a) meets the required specification (2).

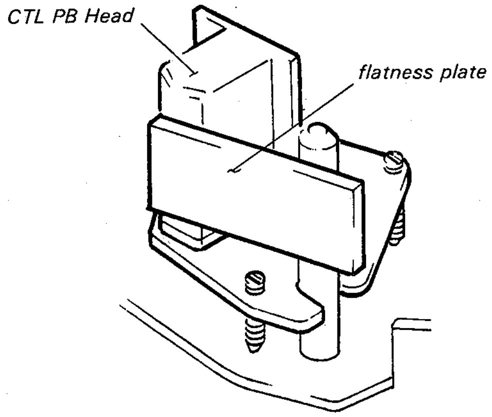
(2) Adjust the adjusting screw (b) meets the required specification (3).

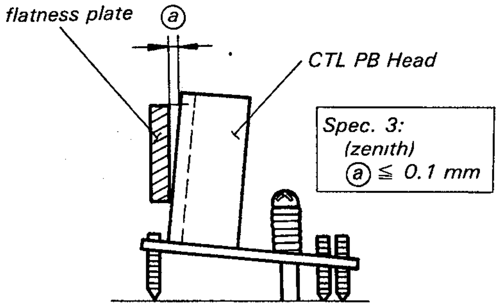
(3) Turn three adjusting screws of exactly equal amount in clockwise or counterclockwise direction so that the relationship between tape and head meets the required specification (1).


CTL PB Head
adjusting screw (a)
TG-1
adjusting screw (c)
adjusting screw (b)

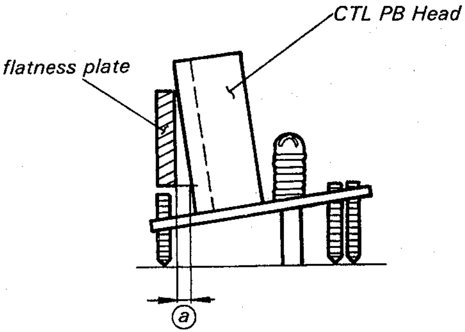

CTL PB Head
ⓐ
Spec. 1
(height)
0.02 mm ≦ ⓐ ≦ 0.4 mm


CTL PB Head
ⓐ
TG-1
Spec. 2:
(azimuth)
ⓐ ≒ ⓑ
ⓑ


CTL PB Head
flatness plate


flatness plate
ⓐ
CTL PB Head

Spec. 3:
(zenith)
ⓐ ≦ 0.1 mm


CTL PB Head
flatness plate
ⓐ

7-7-3. Audio Head Height Adjustment

Tool: Alignment tape, RR5-2SC PAL
Oscilloscope

Preparation:

(1) Connect the VTVM or oscilloscope to AUDIO OUT CH-1 and CH-2 terminals.

(2) Playback the audio 1kHz signal portion of the alignment tape.

Check procedure:

(1) Check that the CH-1 output level increase is less than 0.5dB when pressing down at "A". If it is not met, perform the adjustment procedures (1) and (2).

(2) Check that the CH-2 output level increase is less than 0.5dB when pushing up at "B". If it is not met, perform the adjustment procedures (3) and (4).

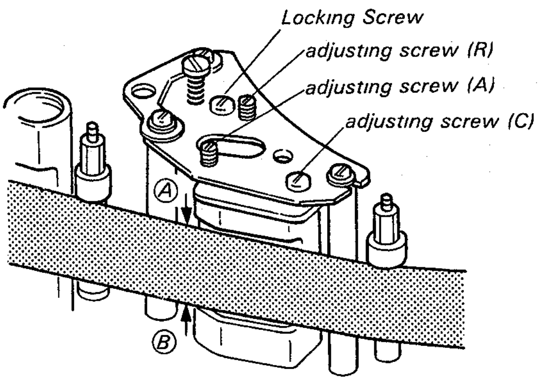
Adjustment procedure:

(1) Loosen the locking screw and turn adjusting screws (R) and (A) of exactly equal amount in counterclockwise direction and turn adjusting screw (C) of exactly equal amount in clockwise direction.

(2) Tighten the locking screw and check height again.

(3) Loosen the Locking Screw and turn adjusting screws (R) and (A) of exactly equal amount in clockwise direction and turn the adjusting screw (C) of exactly equal amount in counterclockwise direction.

(4) Tighten the locking screw and check height again.



Spec..

- *CH-1 level increase is less than 0.5 dB when pressing down at Ⓐ portion*
- *CH-2 level increase is less than 0.5 dB when pushing up at Ⓑ portion*

7-7-4. Audio Head Zenith Adjustment

Tool: Flatness plate

Check procedure:

(1) When the Flatness Plate is set on the Audio Head and TG-3, check that the clearance between the Audio Head and the Flatness Plate meets the required specification.

Adjustment procedure:

- When the clearance is out of spec. at the top portion of the Audio Head.

(1) Turn the adjusting screw (R) in counterclockwise direction.

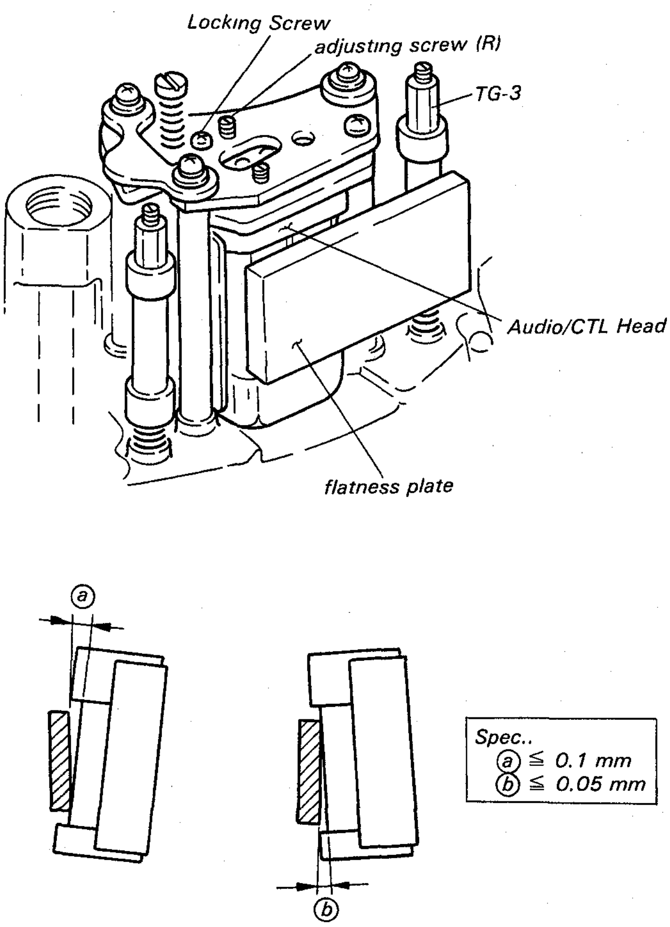
(2) Tighten the locking screw and check zenith again.

- When the clearance is out of spec. at the bottom portion of the Audio Head.

(3) Loosen the locking screw 1/4 to 1/2 turn.

(4) Turn the adjusting screw (R) in clockwise direction.

(5) Tighten the locking screw and check zenith again.



7-7-5. Audio Head Azimuth Adjustment

Tool: Alignment tape, RR5-2SC PAL
VTVM or oscilloscope

Preparation:

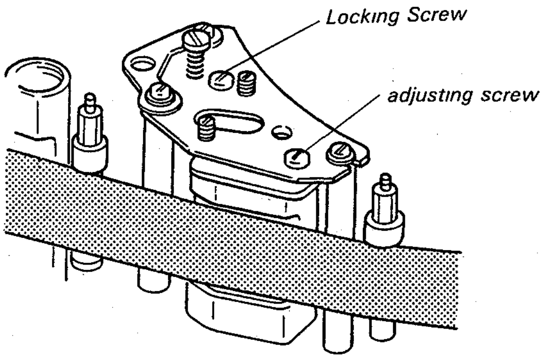
(1) Connect the VTVM or oscilloscope to AUDIO OUT CH-1 or CH-2 terminal.

(2) Playback the audio 10kHz signal portion of the alignment tape.

Adjustment procedure:

(1) Loosen the locking screw and adjust the maximum output level by turning the adjusting screw.

(2) Tighten the locking screw.



7-7-6. Audio Head Phase Adjustment

Tool: Alignment tape, RR5-2SC PAL
Oscilloscope

Preparation:

(1) Connect the horizontal and vertical terminals of the oscilloscope to AUDIO OUT CH-1 and CH-2 terminals.

(2) Playback the audio 1kHz signal portion of the alignment tape.

(3) Adjust the scope for a lissajous waveform with horizontal and vertical amplitudes of 6cm.

Check procedure:

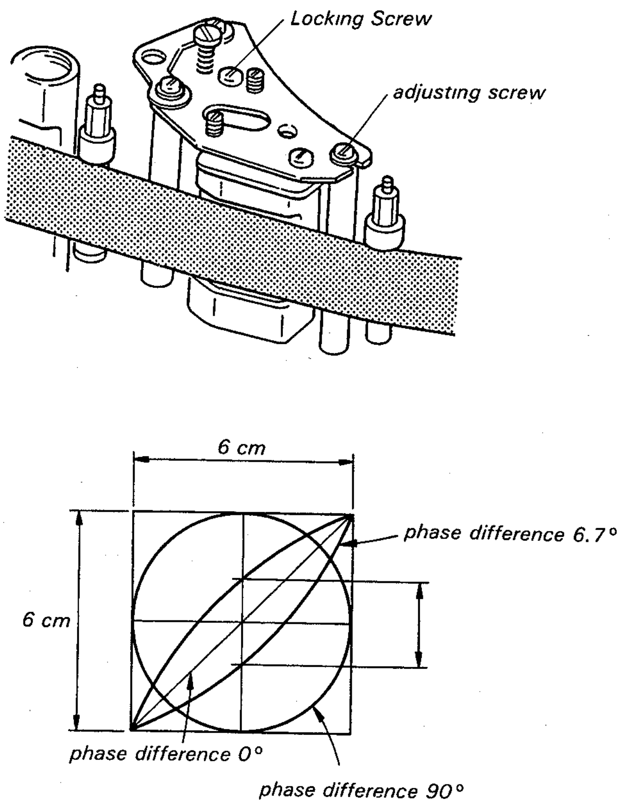
(1) Playback the audio 1kHz signal portion of the alignment tape, and check that the vertical amplitude at the center in the horizontal direction meets the required specification.

(2) Playback the audio 10kHz signal portion of the alignment tape, and check that the lissajous waveform meets the required specification.

Adjustment procedure:

(1) Loosen the locking screw 1/4 to 1/2 turn and adjust the phase by turning the adjusting screw.

(2) Tighten the locking screw and confirm phase again.



Spec..
- within 0.7 cm at 1 KHz (within 6.7°)
- within 90° at 10 KHz

7-7-7. Audio/CTL Head Position Adjustment

Tool: Alignment tape, RR5-2SC PAL
Oscilloscope

Preparation:

(1) Connect the oscilloscope to TP1 on the VA-35B Board and EXT.TRIG to TP1 on the VA-35B Board.

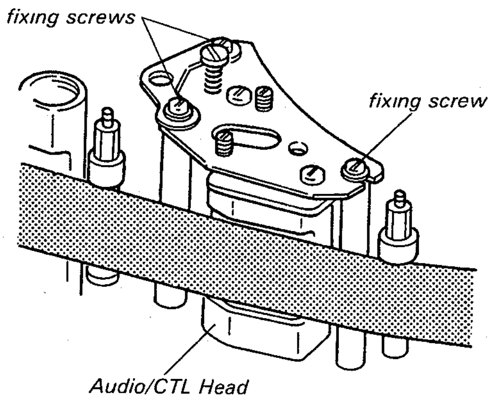
(2) Playback the color-bar signal portion of the alignment tape.

Check procedure:

(1) While turning the TRACKING control knob, check that the RF envelope has the maximum amplitude at the center detent position.

Adjustment procedure:

(1) Adjust the position of the Audio/CTL Head.



7-8. VIDEO HEAD DIHEDRAL ADJUSTMENT

Tool: Dihedral adjustment screwdriver
Alignment tape, RR5-2SC PAL
monitor TV

Check procedure:

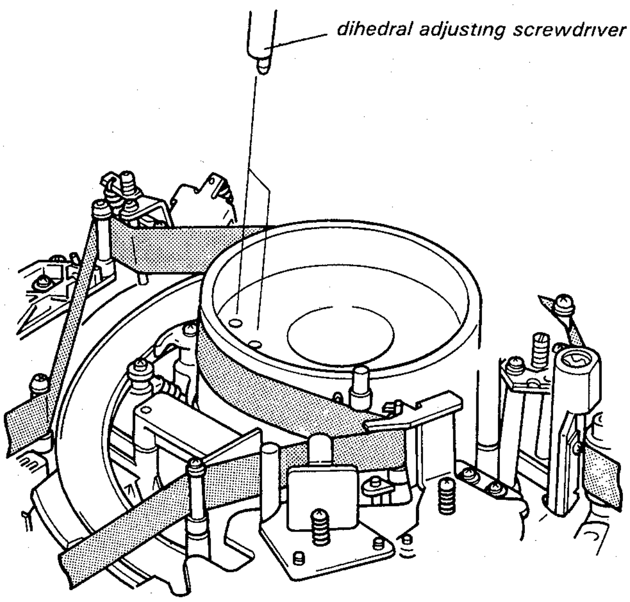
(1) Playback the monoscope signal of the alignment tape.

(2) Check that the clearance of vertical line beneath the switching point on the monitor screen. If the clearance of the separate lines is more than the width of vertical one line, adjustment is necessary.

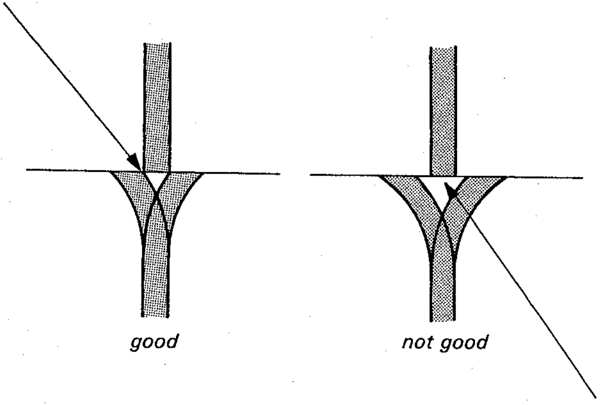
Adjustment procedure:

(1) Install the adjustment screwdriver into the adjusting hole of the white lead side's Video Head, adjust the dihedral.

(2) Playback the monoscope signal. When the distortion has become worse, adjust the dihedral to install the adjustment screwdriver into adjusting hole of the opposite side's Video Head in Step (1).



If the clearance of the separate lines is within the width of vertical line, adjustment is not necessary



If the clearance of the separate lines is more than the width of vertical one line, adjustment is necessary.

SECTION 8
POWER SUPPLY/SYSTEM CONTROL ALIGNMENT

[Equipment Required]
- DC Voltmeter
- Alignment tape: RR5-2SC PAL (Part No. 8-960-035-61)

8-1. SWITCHING REGULATOR ADJUSTMENT

8-1-1. REG +12V Adjustment

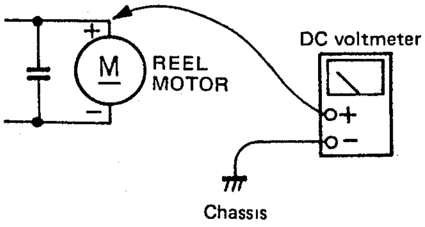
machine conditions for adjustment	spec.	adjustment
• Play back the color bar segment of the alignment tape.	CN201-1/UR-14E 12.1 ± 0.02 Vdc	⊘RV651/UR-14E

NOTE: If the REG 12V adjustment is attempted, re-alignment of the video system and servo system is required.
Do not attempt adjustment to the REG 12V power supply unless machine performance is obviously poor due to incorrect power supply voltage. If adjustments are made to the power supply, re-alignment of the video and servo systems is necessary

8-2. TAPE SENSOR BALANCE ADJUSTMENT

machine conditions for adjustment	**spec.**	**adjustment**
• Set the cassette tape. • STOP mode.	TP2/SY-51 (J-2) 6.0 ± 0.2 Vdc	⊘RV1/SY-51 (J-2)

8-3. REEL MOTOR STILL ADJUSTMENT

machine conditions for adjustment	**spec.**	**adjustment**
• PLAY-PAUSE mode without inserting a cassette tape. • Check that reel motor rotation stops.	Reel motor (+) side/RM-39  M REEL MOTOR + − DC voltmeter + − Chassis DC voltage = 400 ±20 mV	⊘RV4/SY-51 (H-2)

- For reel torque adjustment, refer to Section 6.

RV3/SY-51	6-3. FWD Torque Adjustment
RV2/SY-51	6-4. REV Torque Adjustment

SECTION 9

SERVO SYSTEM ALIGNMENT

[Equipment Required]

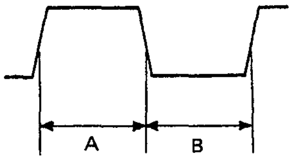
- Dual-trace oscilloscope
- Frequency counter
- Vacuum tube voltmeter (VTVM)
- Alignment tape: RR5-2SC PAL (Part No. 8-960-035-61) and RR5-3SA NTSC (Part No. 8-960-015-04)

Real Time Counter (min.)	Tape Counter	Video Track	Audio Track
00:00 – 04:00	000 – 100	Monoscope	3 kHz, 0 dB
04:00 – 09:00	100 – 208	Color-bar	———
09:00 – 14:00	208 – 300	R-F sweep	———
14:00 – 16:00	300 – 335	Mod. 20T pulse	1 kHz, 0 dB
16:00 – 18:00	335 – 367	M.S. w/burst	10 kHz, –10 dB
18:00 – 20:00	367 – 398	Pseudo C.B. for DOC adj.	———

9-1. CTL HEAD POSITION ADJUSTMENT

Refer to Section 7-7.

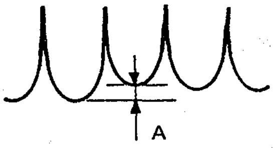
9-2. CAPSTAN FREE SPEED ADJUSTMENT

machine conditions for adjustment	**spec.**	**adjustment**
NTSC • SYSTEM SELECT sw: NTSC • Play back the color bar segment of the alignment tape RR5-3SA.	TP3/SV-74B (G-4)  A = B ± 5% (Take reading at the center of jitter.)	NTSC adj. ⊘RV100/SV-74B (G-4)
PAL • SYSTEM SELECT sw: PAL • Play back the color bar segment of the alignment tape RR5-2SC PAL.		PAL adj. ⊘RV105/SV-74B (G-4) TRIG: INT

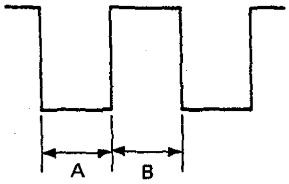
9-3. CAPSTAN SEARCH SPEED ADJUSTMENT

machine conditions for adjustment	**spec.**	**adjustment**
• SYSTEM SELECT sw: PAL • Short between TP3 and E1/SY-51 with a shorting clip. • Short between TP28 and E1/SV-74B with a shorting clip. • Play back the color bar segment of the alignment tape RR5-2SC PAL. • SEARCH mode. • After adjustment is completed, remove the shorting clips.	TP27/SV-74B (G-4) Frequency counter 180 ± 40 Hz	⊘RV101/SV-74B (H-5)

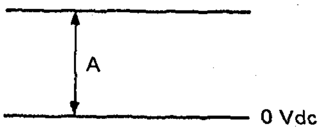
9-4. CAPSTAN STOP SERVO ADJUSTMENT (1)

machine conditions for adjustment	**spec.**	**adjustment**
• SYSTEM SELECT sw: PAL • Play back the color bar segment of the alignment tape RR5-2SC PAL. • Short between TP16 and TP19/SV-74 with a shorting clip. • After adjustment is completed, remove the shorting clip.	TP21/SV-74B (H-6)  A < 40 mV	⊘ RV106/SV-74B (1-5) TRIG: INT

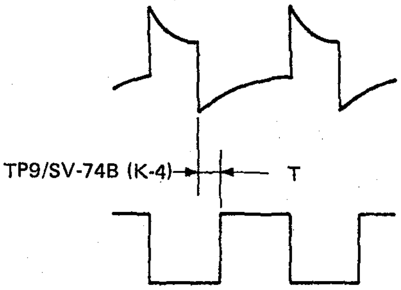
9-5. CAPSTAN FWD/REV DETECTION ADJUSTMENT

machine conditions for adjustment	spec.	adjustment
• SYSTEM SELECT sw: PAL • Play back the color bar segment of the alignment tape RR5-2SC PAL.	TP25/SV-74B (G-6)  A = B (A+B = 1.1ms)	⊘ RV201/SV-74B (1-5) TRIG: INT

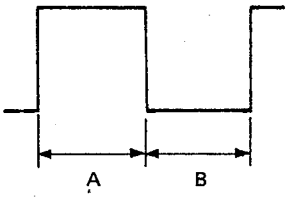
9-6. CAPSTAN STOP SERVO ADJUSTMENT (2)

machine conditions for adjustment	spec.	adjustment
• SYSTEM SELECT sw: PAL • Play back the color bar segment of the alignment tape RR5-2SC PAL, and set to the PAUSE mode. • Short between TP6 and TP22/SV-74 with a shorting clip. • After adjustment is completed, remove the shorting clip.	TP26/SV-74B (E-3)  A = 1.0 ± 0.1 V	⊘ RV107/SV-74B (H-4) TRIG: INT

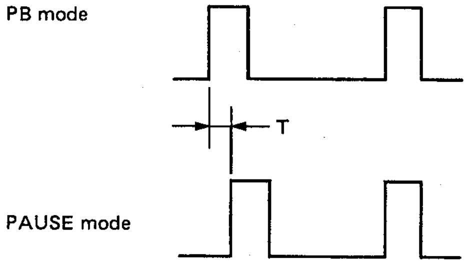
9-7. TRACKING MULTI ADJUSTMENT

machine conditions for adjustment	spec.	adjustment
NTSC • SYSTEM SELECT sw: NTSC • Set the TRACKING control to the center click position. • Play back the color bar segment of the alignment tape RR5-3SA.	TP4/SV-74B (K-4)  T = 0 ± 100 μsec (Take reading at the center of jitter.)	NTSC adj. ⊘ RV407/SV-74B (H-2)
PAL • SYSTEM SELECT sw: PAL • Set the TRACKING control to the center click position. • Play back the color bar segment of the alignment tape RR5-2SC PAL.		PAL adj. ⊘ RV406/SV-74B (H-2) TRIG: INT (TP9/SV-74B)

9-8. DRUM FREE SPEED ADJUSTMENT

machine conditions for adjustment	**spec.**	**adjustment**
NTSC • SYSTEM SELECT sw: NTSC • Play back the color bar segment of the alignment tape RR5-3SA.	TP15/SV-74B (E-2)  A = B ± 5%	NTSC adj. ⊘ RV401/SV-74B (M-3)
PAL • SYSTEM SELECT sw: PAL • Play back the color bar segment of the alignment tape RR5-2SC PAL.		PAL adj. ⊘ RV402/SV-74B (M-3) TRIG: INT

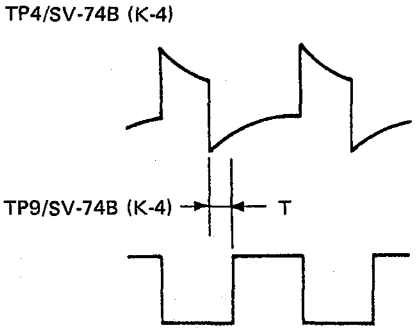
9-9. DRUM AFC LEVEL ADJUSTMENT

machine conditions for adjustment	**spec.**	**adjustment**
• SYSTEM SELECT sw: PAL • Play back the color bar segment of the alignment tape RR5-2SC PAL. • PB and PAUSE modes.	TP8/SV-74B (K-2)  T = 0 ± 0.1 μsec	⊘ RV2/SV-74B (G-2) TRIG: INT

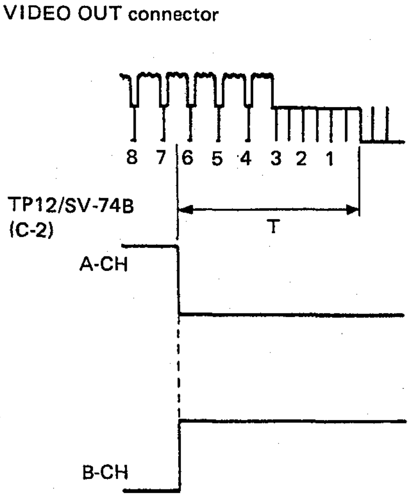
9-10. DRUM AFC TRANSIENT ADJUSTMENT

machine conditions for adjustment	**spec.**	**adjustment**
• SYSTEM SELECT sw: PAL • Play back the color bar segment of the alignment tape RR5-2SC PAL. • PB and PAUSE modes.	TP17/SV-74B (D-2) DC level in the PAUSE mode = Reference DC level in the PB mode = Reference ±0.1 Vdc.	⊘ RV1/SV-74B (F-2)

9-11. INSTANT START ADJUSTMENT

machine conditions for adjustment	spec.	adjustment
• SYSTEM SELECT sw: PAL • Set the TRACKING control to the center click position. • Play back the color bar segment of an alignment tape RR5-2SC PAL, and set to the PAUSE mode. • Short between TP11 and E1/ SV-74B with a shorting clip. • Cancel the PAUSE mode. • After adjustment is completed, remove the shorting clip.	 T = 0 ± 1 msec (Take reading at the center of jitter.)	⊘ RV102/SV-74B (H-3) TRIG: ING (TP9/SV-74B)

9-12. SWITCHING POSITION ADJUSTMENT

machine conditions for adjustment	spec.	adjustment
• SYSTEM SELECT sw: NTSC • Play back the color bar segment of the alignment tape RR5-3SA. • Short between TP8 and E501/ SV-74B with a shorting clip. • Short between TP5 and E501/ SV-74B with a shorting clip. • Set the TRACKING control to the center click position. ⇩	 VIDEO OUT connector 8 7 6 5 4 3 2 1 TP12/SV-74B (C-2) T A-CH B-CH T = 6.5 ± 0.5H	A-CH adj. ⊘ RV405/SV-74B (I-2) B-CH adj. ⊘ RV403/SV-74B (L-3)
• SYSTEM SELECT sw: PAL • Play back the color bar segment of the alignment tape RR5-2SC PAL. • After adjustment is completed, remove the shorting clips.		B-CH adj. ⊘ RV404/SV-74B (L-3) TRIG: TP9/SV-74B (TV-V)

SECTION 10
AUDIO SYSTEM ALIGNMENT

[Equipment Required]
- Vacuum tube voltmeter (VTVM)
- Alignment tape: RR5-2SC PAL (Part No. 8-960-035-61)

Real Time Counter (min.)	Tape Counter	Video Track	Audio Track
00:00 – 04:00	000 – 100	Monoscope	3 kHz, 0 dB
04:00 – 09:00	100 – 208	Color-bar	———
09:00 – 14:00	208 – 300	R-F sweep	———
14:00 – 16:00	300 – 335	Mod. 20T pulse	1 kHz, 0 dB
16:00 – 18:00	335 – 367	M.S. w/burst	10 kHz, –10 dB
18:00 – 20:00	367 – 398	Pseudo C.B. for DOC adj.	———

10-1. AUDIO HEAD POSITION ADJUSTMENT

Refer to Section 7-7.

10-2. AUDIO PLAYBACK FREQUENCY RESPONSE ADJUSTMENT

machine conditions for adjustment	spec.	adjustment
• Play back the 1 kHz and 10 kHz segments of the alignment tape RR5-2SC PAL.	LINE OUT connector (terminated by 47 kΩ) 1 kHz level = Reference level 10 kHz level = Reference level – 10 ±1 dB Adjust both CH-1 and CH-2.	CH-1 adj. ⊘ RV901/VA-35B (I-7) CH-2 adj. ⊘ RV902/VA-35B (H-7)

10-3. AUDIO PLAYBACK OUTPUT LEVEL ADJUSTMENT

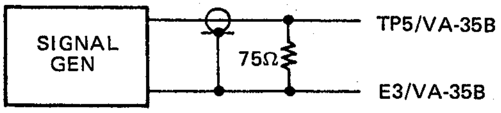
machine conditions for adjustment	spec.	adjustment
• Play back the 1 kHz segment of the alignment tape RR5-2SC PAL.	LINE OUT connector (terminated by 47 kΩ) –5 ± 0.5 dBS Adjust both CH-1 and CH-2.	CH-1 adj. ⊘ RV903/VA-35B (I-7) CH-2 adj. ⊘ RV904/VA-35B (H-7)

SECTION 11
VIDEO SYSTEM ALIGNMENT

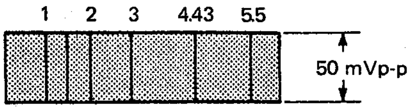
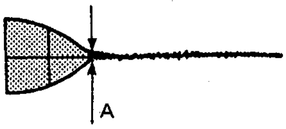
[Equipment Required]
- Dual-trace oscilloscope
- Frequency counter
- Video sweep signal generator
- DC voltmeter
- Alignment tape: RR5-2SC PAL (Part No. 8-960-035-61)

Real Time Counter (min.)	Tape Counter	Video Track	Audio Track
00:00 – 04:00	000 – 100	Monoscope	3 kHz, 0 dB
04:00 – 09:00	100 – 208	Color-bar	———
09:00 – 14:00	208 – 300	R-F sweep	———
14:00 – 16:00	300 – 335	Mod. 20T pulse	1 kHz, 0 dB
16:00 – 18:00	335 – 367	M.S. w/burst	10 kHz, –10 dB
18:00 – 20:00	367 – 398	Pseudo C.B. for DOC adj.	———

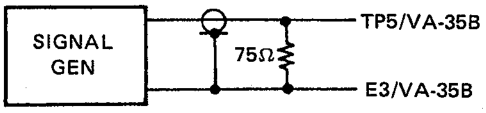
11-1. NOISE CANCELLER ADJUSTMENT



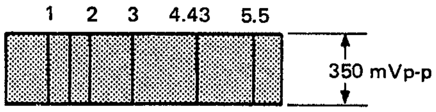
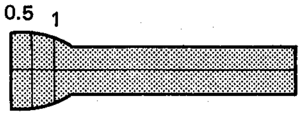
Locked sweep
Marker· 1/1.14/2/3/4.43/5.5 MHz

machine conditions for adjustment	spec.	adjustment
• Unsolder and open SLIT 1/ VA-35B. • Connect a signal generator to TP5 and E3/VA-35B.	TP5/VA-35B (F-8) 	⊘ Level control/SIGNAL GEN.
• Short between CN2-1 and E3/ VA-35B with a shorting clip. • Short between TP11 and E6/ VA-35B with a shorting clip. • VIDEO OUT connector· terminated by 75Ω. • After adjustment is completed, remove the shorting clips. Then solder and short SLIT 1/ VA-35B.	TP6/VA-35B (B-10)  Minimize the level of A (2 MHz).	⊘ RV8/VA-35B (E-9) TRIG: TRIG OUT/SIGNAL GEN.

11-2. HIGH COMPONENT MIX ADJUSTMENT

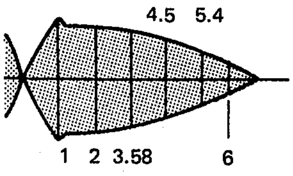


Locked sweep
Marker· 1/1 4/2/3/4.43/5.5 MHz

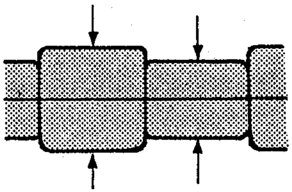
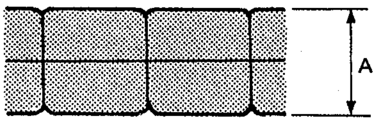
machine conditions for adjustment	spec.	adjustment
• Unsolder and open SLIT 1/ VA-35B. • Connect a signal generator to TP5 and E3/VA-35B.	TP5/VA-35B (F-8) 	⊘ Level control/SIGNAL GEN.
• Short between CN2-1 and E3/ VA-35B with a shorting clip. • Short between TP11 and E6/ VA-35B with a shorting clip. • VIDEO OUT connector: terminated by 75Ω. • After adjustment is completed, remove the shorting clips. Then solder and short SLIT 1/ VA-35B.	TP6/VA-35B (B-10)  0.2 MHz level = Reference 0.5 MHz level = Reference $^{+5}_{-0}$%	⊘ RV7/VA-35B (E-10) TRIG: TRIG OUT/SIGNAL GEN.

11-3. PLAYBACK RF AMPLIFIER ADJUSTMENT

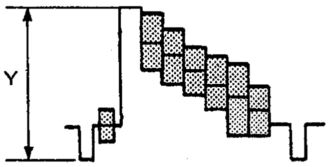
11-3-1. RF Frequency Response Adjustment

<table>
<tr><th>machine conditions for adjustment</th><th>spec.</th><th>adjustment</th></tr>
<tr>
<td>• Play back the RF sweep segment of the alignment tape RR-2SC PAL.
• Short between TP8 and E3/SV-74B with a shorting clip.
• After adjustment is completed, remove the shorting clip.</td>
<td>TP1/VA-35B (E-3)

<table>
<tr><th>2MHz</th><th>3.58MHz</th><th>4.5MHz</th><th>5.4MHz</th><th>6MHz</th></tr>
<tr><td>103
±20%</td><td>108
±15%</td><td>100%
reference</td><td>80
±10%</td><td>68
±15%</td></tr>
</table>
</td>
<td>CH-A adj.
⊘ RV1/VA-35B (G-3)
CH-B adj.
⊘ RV2/VA-35B (G-2)
TRIG: TP2/VA-35B (V)
CH-A ↑
CH-B ↓</td>
</tr>
</table>

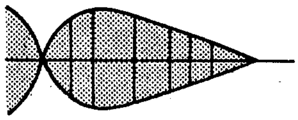
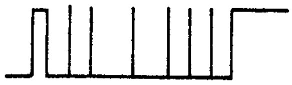
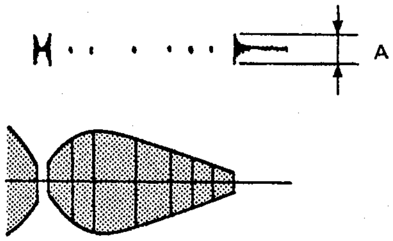
11-3-2. RF Balance/Level Adjustment

<table>
<tr><th>machine conditions for adjustment</th><th>spec.</th><th>adjustment</th></tr>
<tr>
<td rowspan="2">• Play back the color bar segment of an alignment tape RR5-2SC PAL.
• Adjust the TRACKING control so that the RF level is maximized at TP1/VA-35B.</td>
<td>TP1/VA-35B (E-3)

CH-A level = CH-B level</td>
<td>⊘ RV3/VA-35B (F-3)
TRIG. TP2/VA-35B (V)</td>
</tr>
<tr>
<td>TP1/VA-35B (E-3)

A = 90 ± 10 mV</td>
<td>⊘ RV4/VA-35B (F-3)
TRIG: TP2/VA-35B (V)</td>
</tr>
</table>

11-4. Y OUTPUT LEVEL ADJUSTMENT

machine conditions for adjustment	spec.	adjustment
• Play back the color bar segment of the alignment tape RR5-2SC PAL. • VIDEO OUT connector: terminated by 75Ω.	TP6/VA-35B (B-10)  Y level = 1.0 ± 0.05 V	⊘ RV6/VA-35B (E-6) TRIG: INT (TV-H)

11-5. DROPOUT COMPENSATION SENSITIVITY ADJUSTMENT

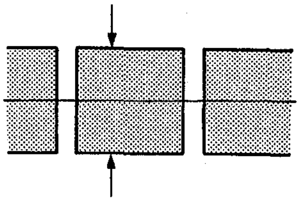
machine conditions for adjustment	spec.	adjustment
• Short between TP8 and E3/SV-74B with a shorting clip. • Play back the RF sweep segment of the alignment tape RR5-2SC PAL. • Set the TRACKING control to the center click position. • Oscilloscope: CHOP mode → ADD mode. • After adjustment is completed, remove the shorting clip.	TP1/VA-35B (E-3)  TP3/VA-35B (H-4)  ADD mode.  A = 20 mV	⊘ RV5/VA-35B (I-4) TRIG: TP2/VA-35B (V)

11-6. CHROMA DEMODULATOR ADJUSTMENT

11-6-1. Reference 4.43 MHz Adjustment

machine conditions for adjustment	spec.	adjustment
• Set the alignment tape. • STOP mode. • Three or more minutes should be elapsed after POWER ON. • COLOR LOCK sw: center.	TP15/VA-35 (C-7) 4.433619 ± 5 Hz	⊘ CV1/VA-35B (A-8)

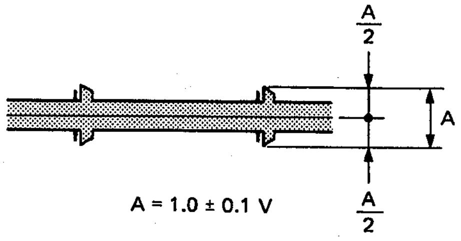
11-6-2. ACC Level Preset

machine conditions for adjustment	spec.	adjustment
• Play back the color bar segment of the alignment tape RR5-2SC PAL.	TP10/VA-35B (A-3)  0.8 ± 0.1 V	⊘ RV10/VA-35B (C-3) TRIG: TP2/VA-35B (V)

11-6-3. VCO DC Level Adjustment

machine conditions for adjustment	spec.	adjustment
• Play back the color bar segment of the alignment tape RR5-2SC PAL.	TP9/VA-35B (B-3) 8.1 ± 0.1 Vdc	⊘ RV9/VA-35B (B-5)

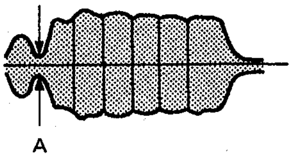
11-6-4. APC Gain Adjustment

machine conditions for adjustment	spec.	adjustment
• Play back the color bar segment of the alignment tape RR5-2SC PAL.	TP17/VA-35B (B-3)  A = 1.0 ± 0.1 V	⊘ RV13/VA-35B (B-2) TRIG: INT

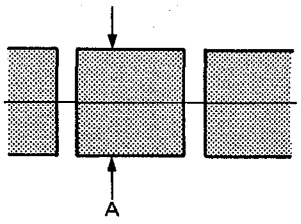
11-6-5. 5.12 MHz Tuning Adjustment

machine conditions for adjustment	spec.	adjustment
• Play back the color bar segment of the alignment tape RR5-2SC PAL.	TP16/VA-35B (D-6) 5.12 MHz ± 1000 Hz (Level ≧ 1.1 Vp-p)	⊘ LV2, LV3/VA-35B

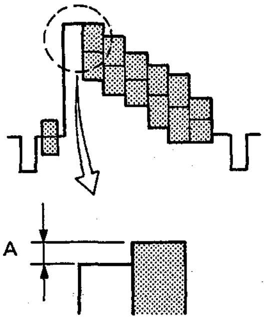
11-6-6. Converter Balance Adjustment

machine conditions for adjustment	spec.	adjustment
• Play back the color bar segment of the alignment tape RR5-2SC PAL.	TP10/VA-35B (A-3)  A (carrier leak) < 50 mV	⊘ RV11/VA-35B (D-4) TRIG: INT (H)

11-6-7. ACC Level Adjustment

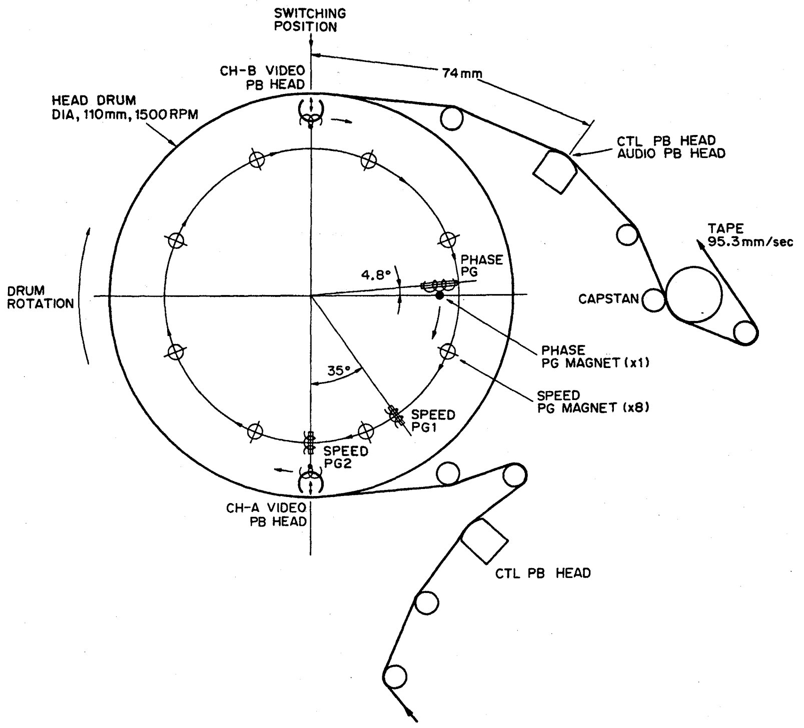
machine conditions for adjustment	spec.	adjustment
• Play back the color bar segment of the alignment tape RR5-2SC PAL.	TP10/VA-35B (A-3)  A = 0.8 ± 0.05 V	⊘ RV10/VA-35B (C-3) TRIG. TP2/VA-35B (V)

11-6-8. Chroma Mix Level Adjustment

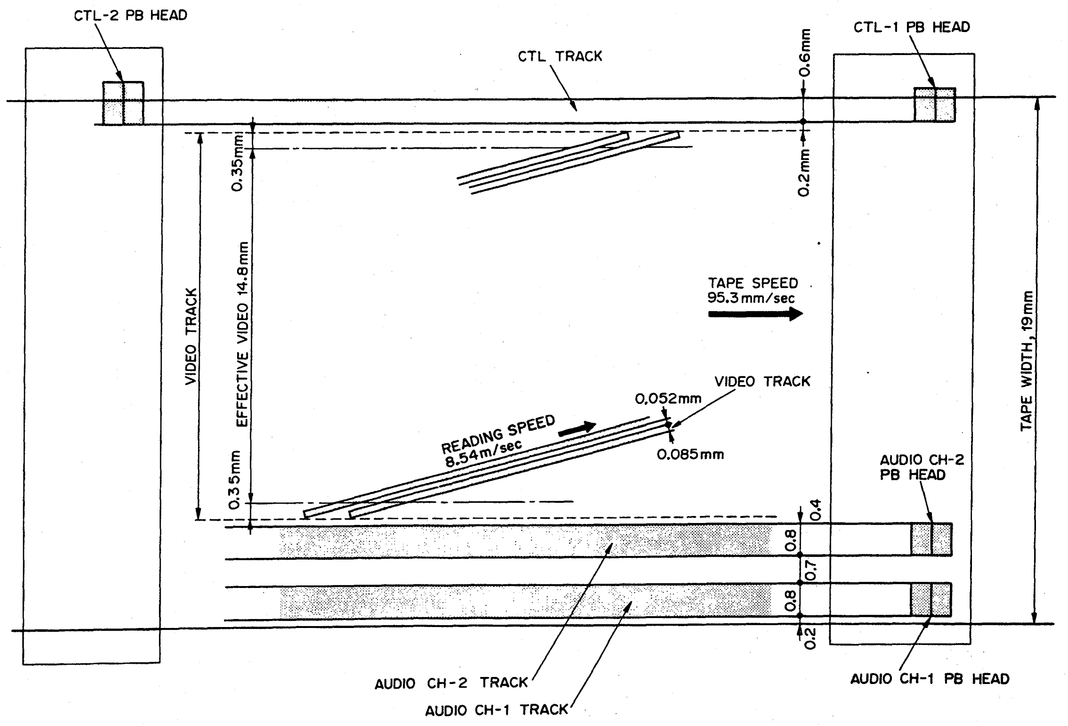
machine conditions for adjustment	spec.	adjustment
• Play back the color bar segment of the alignment tape RR5-2SC PAL.	TP6/VA-35B (B-10)  A = 0	⊘ RV12/VA-35B (A-4) TRIG: INT (TV-H)

SECTION 12
BLOCK DIAGRAMS

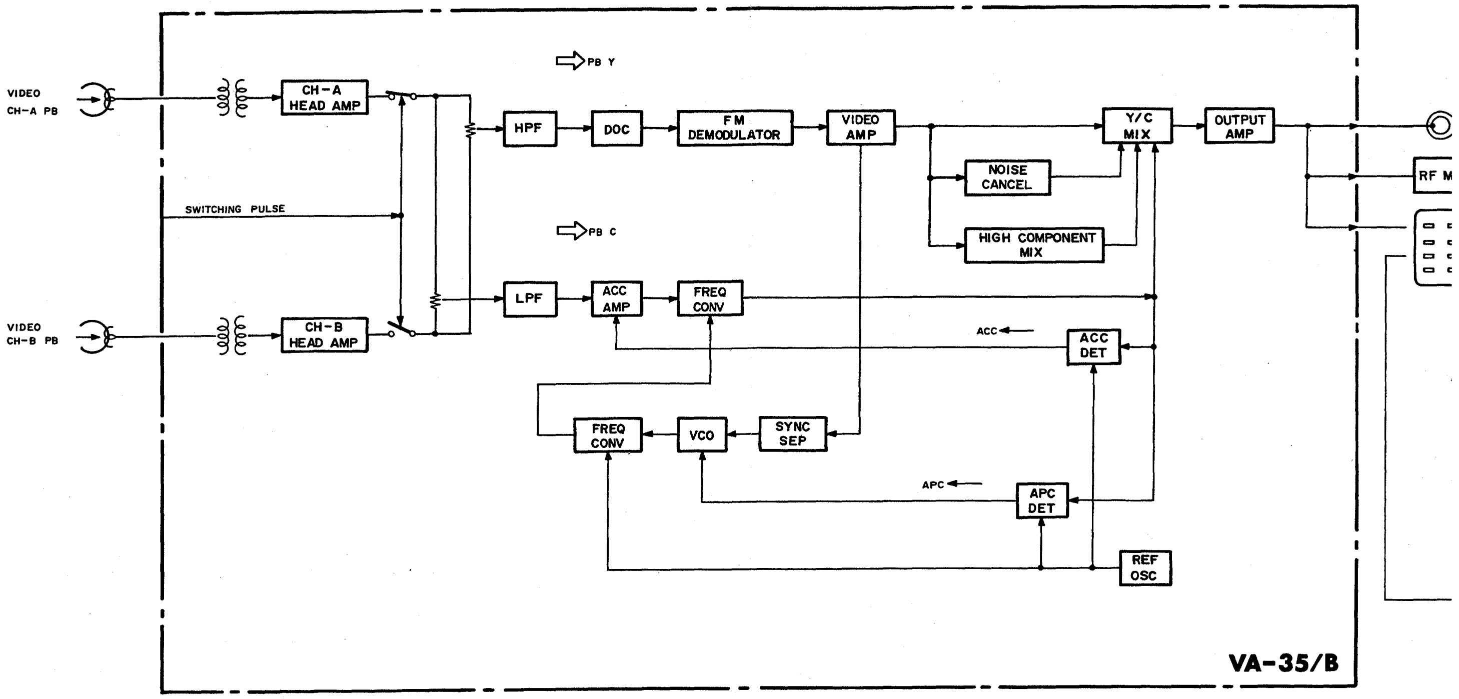
HEAD LOCATION

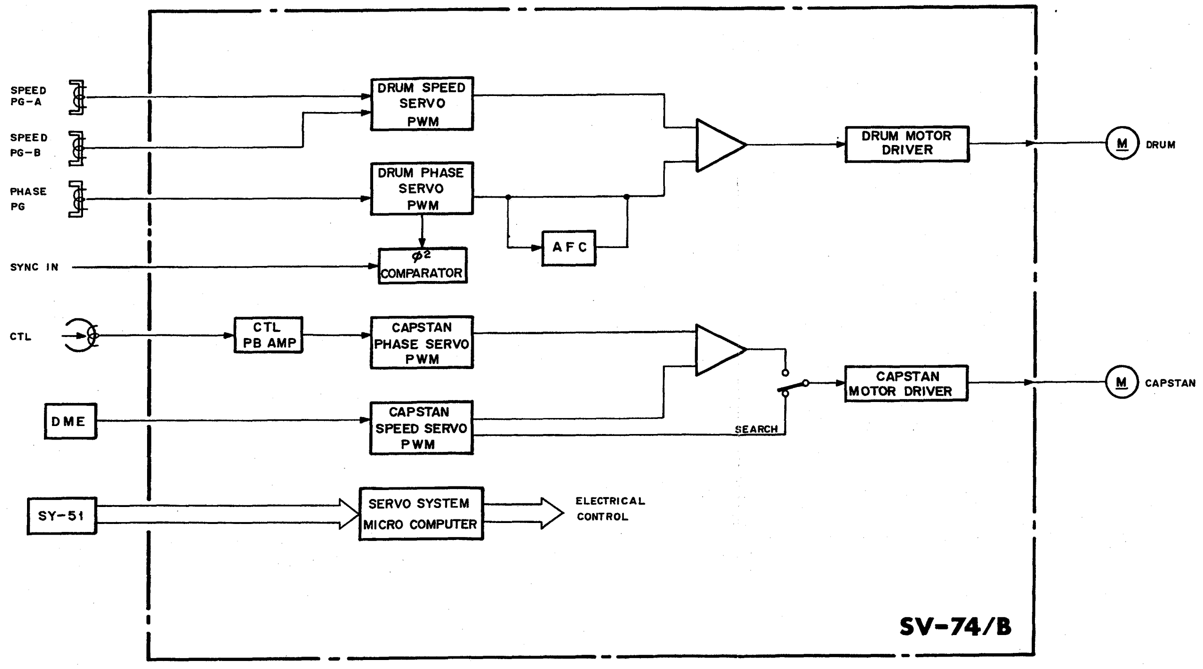

SWITCHING POSITION
CH-B VIDEO PB HEAD
74mm
HEAD DRUM DIA, 110mm, 1500RPM
CTL PB HEAD
AUDIO PB HEAD
TAPE 95.3mm/sec
4.8°
PHASE PG
DRUM ROTATION
CAPSTAN
PHASE PG MAGNET (x1)
35°
SPEED PG MAGNET (x8)
SPEED PG1
SPEED PG2
CH-A VIDEO PB HEAD
CTL PB HEAD

TAPE PATTERN

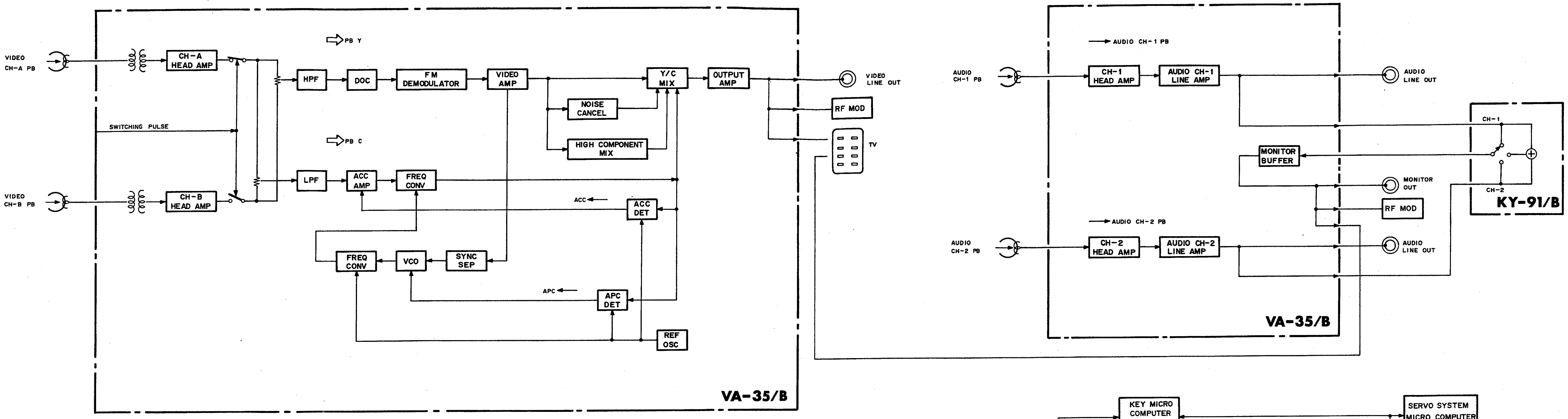

CTL-2 PB HEAD
CTL-1 PB HEAD
CTL TRACK
0.6mm
0.2mm
0.35mm
VIDEO TRACK
EFFECTIVE VIDEO 14.8mm
TAPE SPEED 95.3mm/sec
TAPE WIDTH, 19mm
VIDEO TRACK
0.052mm
READING SPEED 8.54m/sec
0.085mm
0.35mm
AUDIO CH-2 PB HEAD
0.4
0.8
0.7
0.8
0.2
AUDIO CH-2 TRACK
AUDIO CH-1 TRACK
AUDIO CH-1 PB HEAD

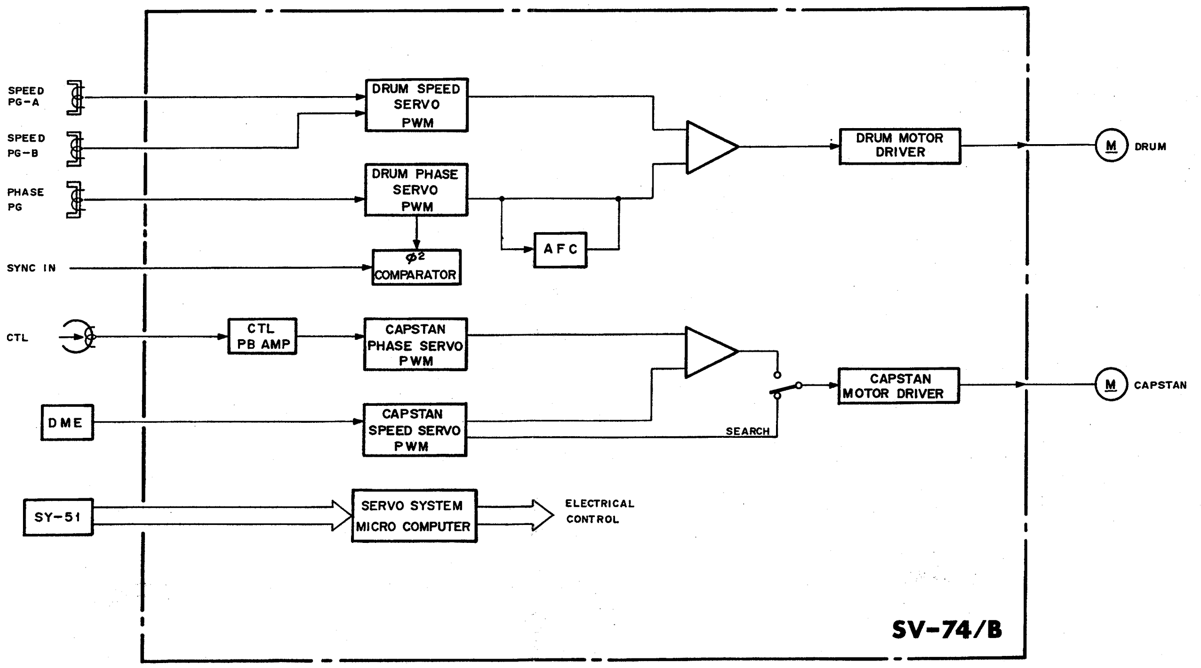
OVERALL
BLOCK DIAGRAM

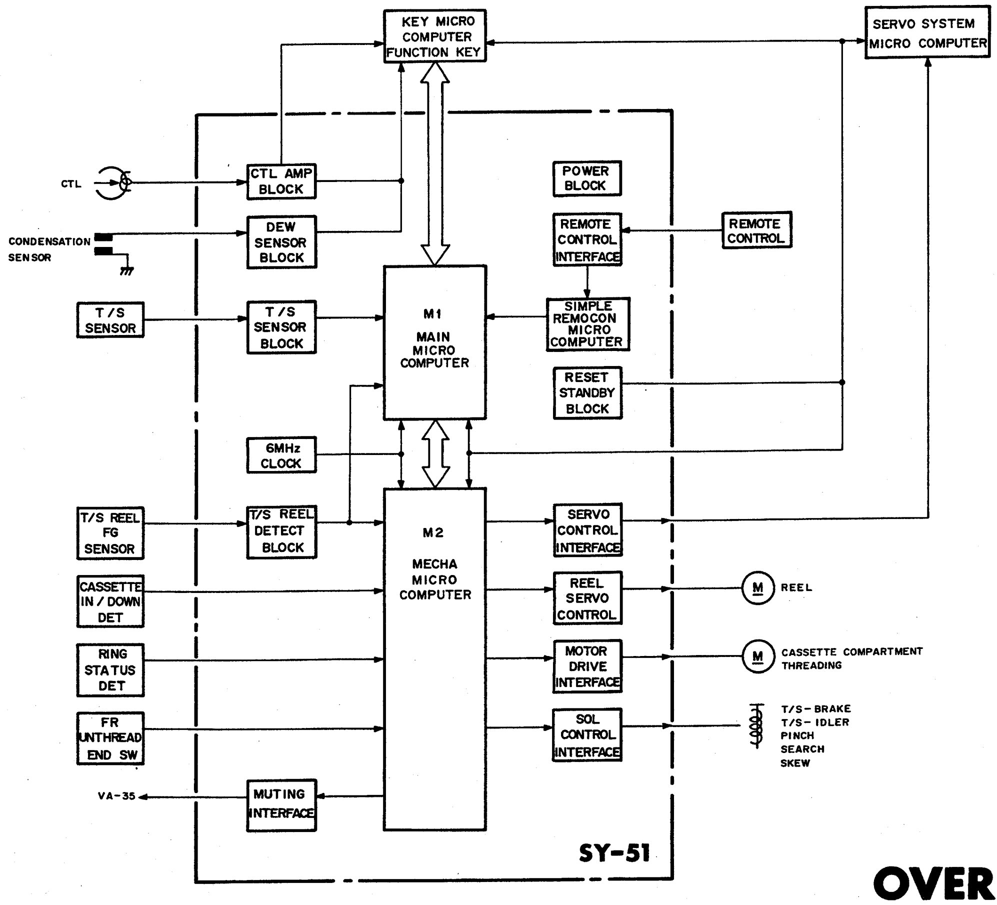

VIDEO CH-A PB
CH-A HEAD AMP
PB Y
HPF
DOC
FM DEMODULATOR
VIDEO AMP
Y/C MIX
OUTPUT AMP
NOISE CANCEL
HIGH COMPONENT MIX
RF M
SWITCHING PULSE
PB C
VIDEO CH-B PB
CH-B HEAD AMP
LPF
ACC AMP
FREQ CONV
ACC
ACC DET
FREQ CONV
VCO
SYNC SEP
APC
APC DET
REF OSC
VA-35/B


SPEED PG-A
SPEED PG-B
PHASE PG
DRUM SPEED SERVO PWM
DRUM PHASE SERVO PWM
DRUM MOTOR DRIVER
M
DRUM
AFC
SYNC IN
φ2 COMPARATOR
CTL
CTL PB AMP
CAPSTAN PHASE SERVO PWM
CAPSTAN MOTOR DRIVER
M
CAPSTAN
DME
CAPSTAN SPEED SERVO PWM
SEARCH
SY-51
SERVO SYSTEM MICRO COMPUTER
ELECTRICAL CONTROL
SV-74/B

OVERALL
BLOCK DIAGRAM

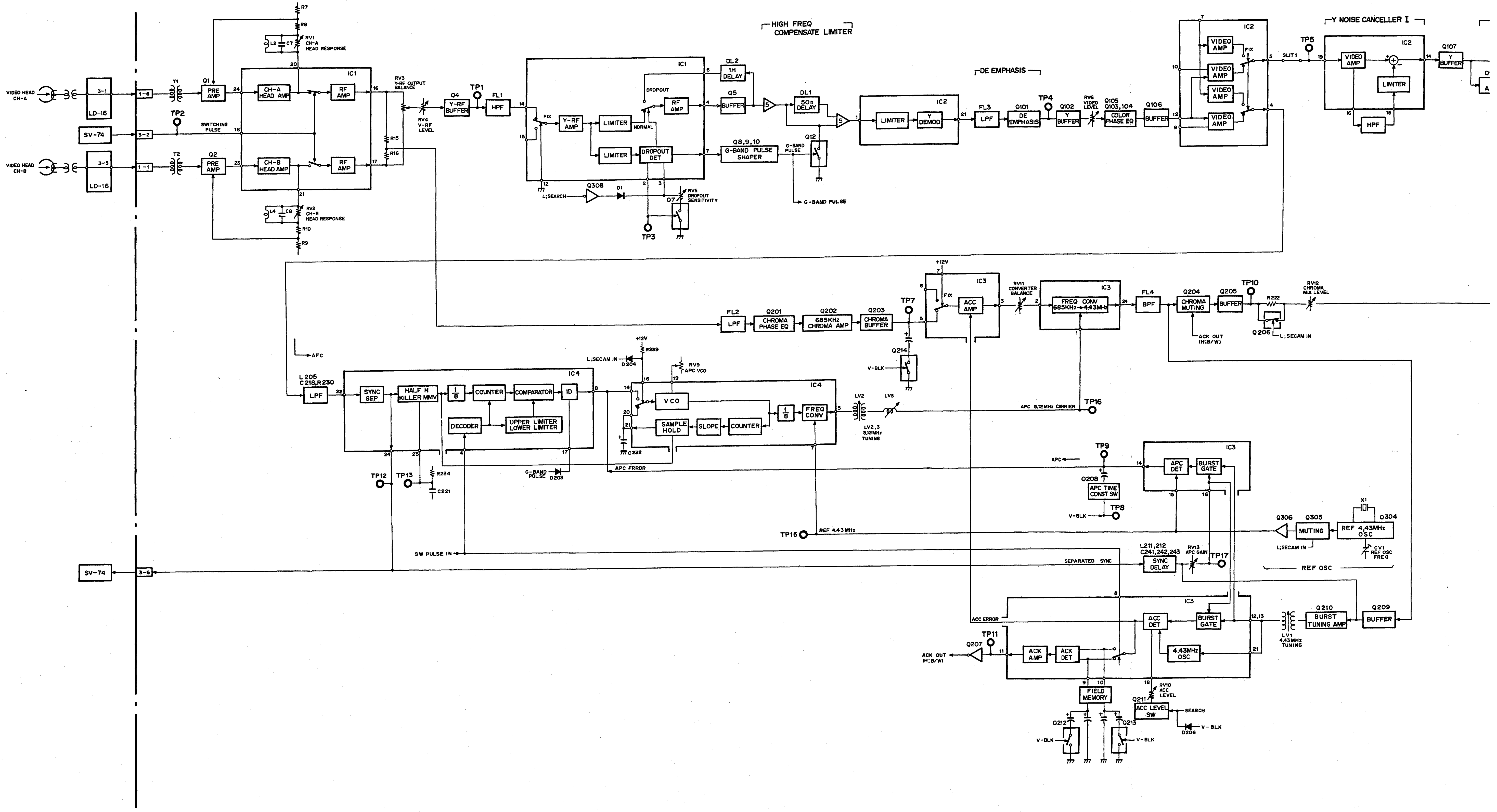

VIDEO CH-A PB
VIDEO CH-B PB
CH-A HEAD AMP
CH-B HEAD AMP
SWITCHING PULSE
PB Y
PB C
HPF
DOC
FM DEMODULATOR
VIDEO AMP
Y/C MIX
OUTPUT AMP
NOISE CANCEL
HIGH COMPONENT MIX
LPF
ACC AMP
FREQ CONV
ACC
ACC DET
FREQ CONV
VCO
SYNC SEP
APC
APC DET
REF OSC
VA-35/B
VIDEO LINE OUT
RF MOD
TV
AUDIO CH-1 PB
AUDIO CH-2 PB
AUDIO CH-1 PB
AUDIO CH-2 PB
CH-1 HEAD AMP
AUDIO CH-1 LINE AMP
CH-2 HEAD AMP
AUDIO CH-2 LINE AMP
AUDIO LINE OUT
AUDIO LINE OUT
MONITOR BUFFER
MONITOR OUT
RF MOD
CH-1
CH-2
KY-91/B
VA-35/B

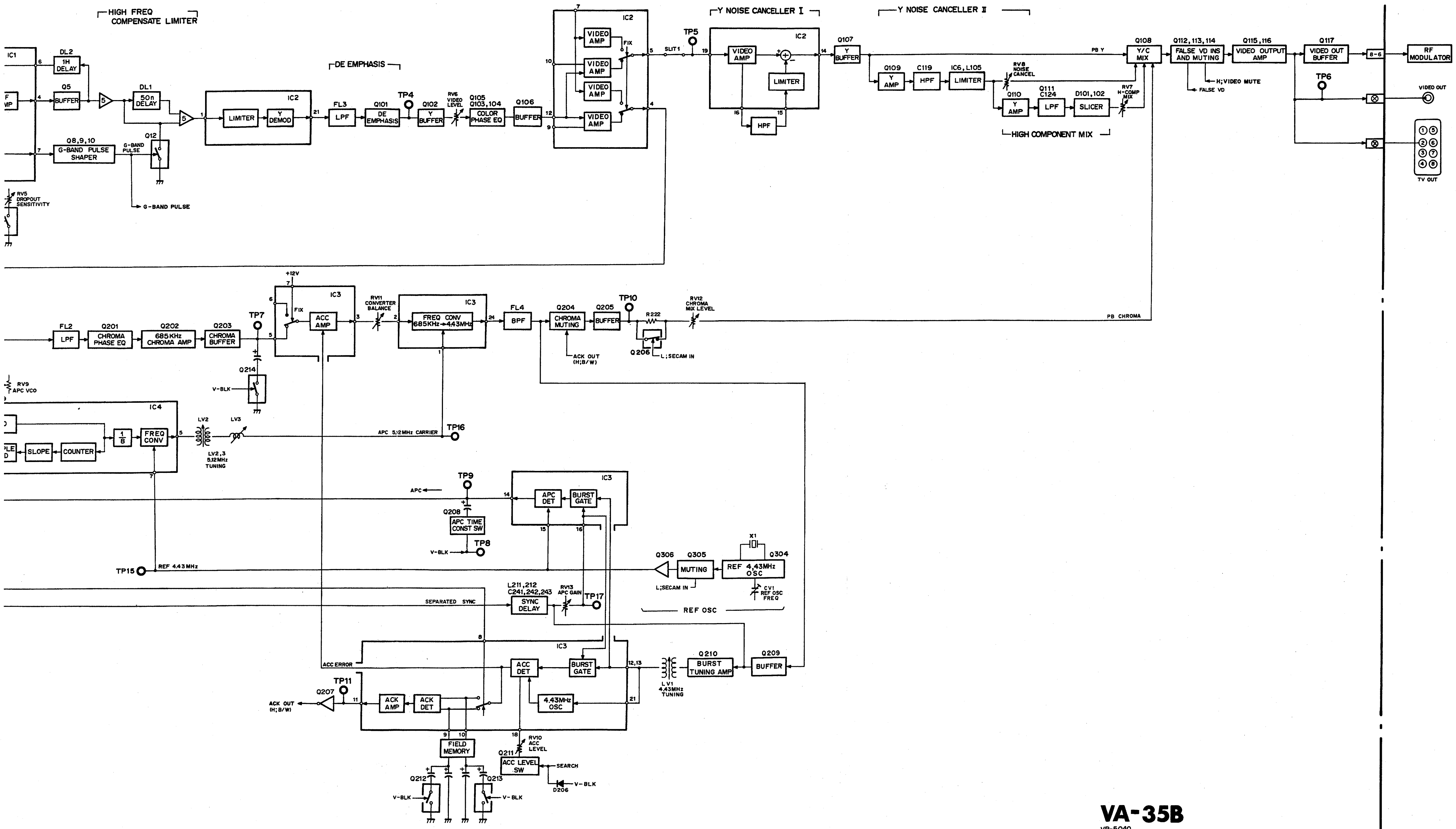

SPEED PG-A
SPEED PG-B
PHASE PG
SYNC IN
CTL
DME
SY-51
DRUM SPEED SERVO PWM
DRUM PHASE SERVO PWM
AFC
φ2 COMPARATOR
CTL PB AMP
CAPSTAN PHASE SERVO PWM
CAPSTAN SPEED SERVO PWM
SEARCH
DRUM MOTOR DRIVER
CAPSTAN MOTOR DRIVER
M DRUM
M CAPSTAN
SERVO SYSTEM MICRO COMPUTER
ELECTRICAL CONTROL
SV-74/B


KEY MICRO COMPUTER FUNCTION KEY
SERVO SYSTEM MICRO COMPUTER
CTL
CTL AMP BLOCK
CONDENSATION SENSOR
DEW SENSOR BLOCK
T/S SENSOR
T/S SENSOR BLOCK
6MHz CLOCK
T/S REEL FG SENSOR
T/S REEL DETECT BLOCK
CASSETTE IN / DOWN DET
RING STATUS DET
FR UNTHREAD END SW
VA-35
MUTING INTERFACE
M1 MAIN MICRO COMPUTER
M2 MECHA MICRO COMPUTER
POWER BLOCK
REMOTE CONTROL INTERFACE
REMOTE CONTROL
SIMPLE REMOCON MICRO COMPUTER
RESET STANDBY BLOCK
SERVO CONTROL INTERFACE
REEL SERVO CONTROL
MOTOR DRIVE INTERFACE
SOL CONTROL INTERFACE
M REEL
M CASSETTE COMPARTMENT THREADING
T/S-BRAKE
T/S-IDLER
PINCH
SEARCH
SKEW
SY-51

OVERALL
VP-5020
VP-5040

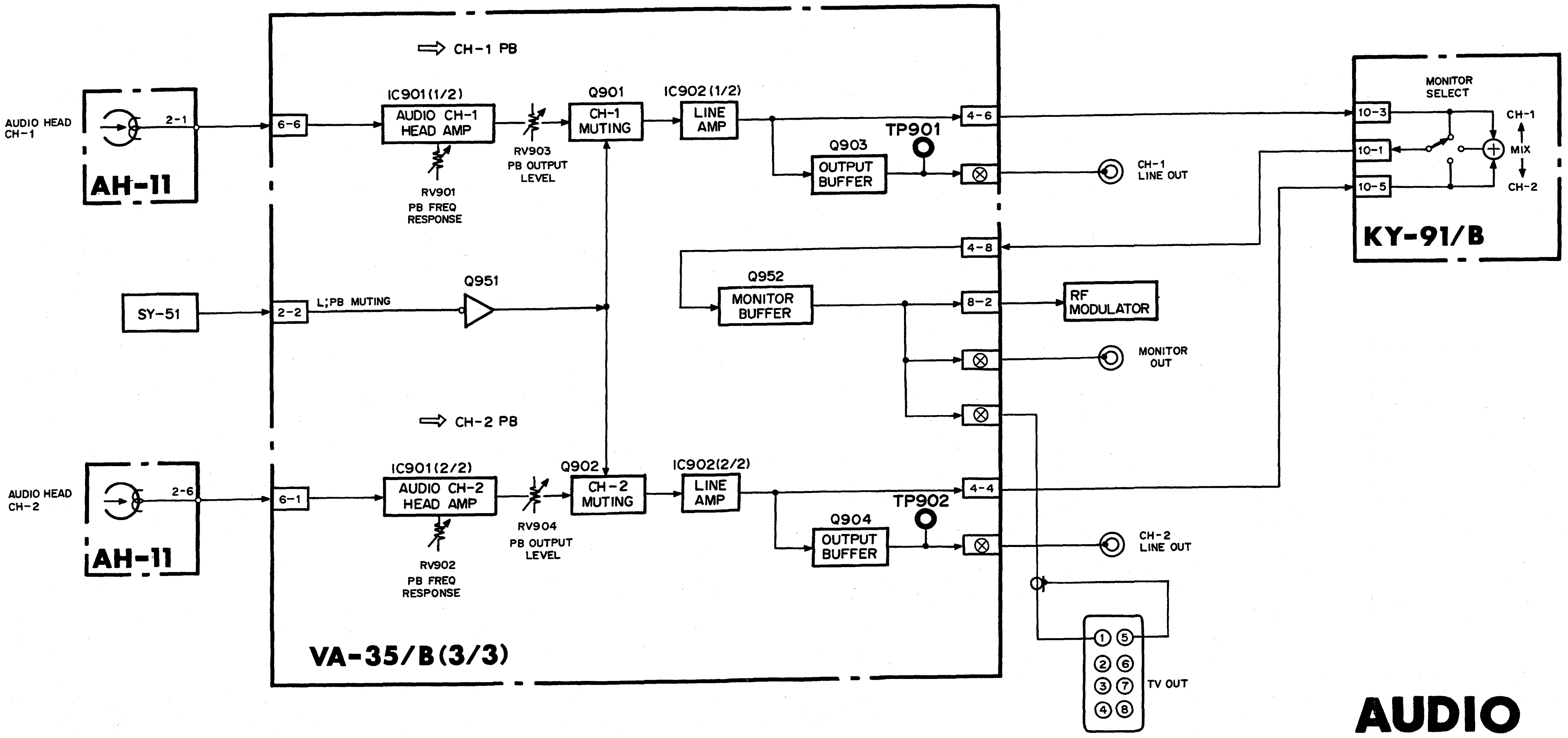
VIDEO SYSTEM
BLOCK DIAGRAM


VIDEO HEAD CH-A
VIDEO HEAD CH-B
3-1
3-5
LD-16
SV-74
1-6
3-2
1-1
3-6
T1
T2
Q1
PRE AMP
Q2
TP2
SWITCHING PULSE
R7
R8
RV1 CH-A HEAD RESPONSE
L2
C7
IC1
CH-A HEAD AMP
CH-B HEAD AMP
RF AMP
RV2 CH-B HEAD RESPONSE
L4
C8
R10
R9
RV3 Y-RF OUTPUT BALANCE
R15
R16
RV4 V-RF LEVEL
Q4
Y-RF BUFFER
TP1
FL1
HPF
FIX
Y-RF AMP
LIMITER
NORMAL
DROPOUT
DROPOUT DET
L;SEARCH
Q308
D1
RV5 DROPOUT SENSITIVITY
Q7
TP3
DL2
1H DELAY
Q5
BUFFER
Q8,9,10
G-BAND PULSE SHAPER
G-BAND PULSE
Q12
HIGH FREQ COMPENSATE LIMITER
DL1
50n DELAY
IC2
Y DEMOD
DE EMPHASIS
FL3
LPF
Q101
DE EMPHASIS
TP4
Q102
Y BUFFER
RV6 VIDEO LEVEL
Q105 Q103,104
COLOR PHASE EQ
Q106
VIDEO AMP
TP5
SLIT 1
Y NOISE CANCELLER I
Q107
HPF
+12V
FL2
Q201
CHROMA PHASE EQ
Q202
685KHz CHROMA AMP
Q203
CHROMA BUFFER
TP7
IC3
ACC AMP
Q214
V-BLK
RV11 CONVERTER BALANCE
FREQ CONV 685KHz→4.43MHz
FL4
BPF
Q204
CHROMA MUTING
Q205
TP10
R222
Q206
L;SECAM IN
ACK OUT (H;B/W)
RV12 CHROMA MIX LEVEL
AFC
L205 C218,R230
IC4
SYNC SEP
HALF H KILLER MMV
1/8
COUNTER
COMPARATOR
ID
DECODER
UPPER LIMITER LOWER LIMITER
R239
D204
RV9 APC VCO
VCO
SAMPLE HOLD
SLOPE
FREQ CONV
C232
LV2
LV3
LV2,3 5.12MHz TUNING
APC 5.12MHz CARRIER
TP16
TP12
TP13
R234
C221
G-BAND PULSE
D203
APC ERROR
TP9
APC
Q208
APC TIME CONST SW
TP8
APC DET
BURST GATE
TP15
REF 4.43MHz
SW PULSE IN
X1
Q306
Q305
Q304
MUTING
REF 4.43MHz OSC
CV1 REF OSC FREQ
REF OSC
L211,212 C241,242,243
SYNC DELAY
RV13 APC GAIN
TP17
SEPARATED SYNC
ACC ERROR
ACC DET
Q210
BURST TUNING AMP
Q209
LV1 4.43MHz TUNING
TP11
Q207
ACK OUT (H;B/W)
ACK AMP
ACK DET
4.43MHz OSC
FIELD MEMORY
RV10 ACC LEVEL
Q211
ACC LEVEL SW
SEARCH
D206
Q212
Q213


HIGH FREQ COMPENSATE LIMITER
IC1
DL2
1H DELAY
Q5
BUFFER
DL1
50n DELAY
Q8,9,10
G-BAND PULSE SHAPER
G-BAND PULSE
Q12
RV5 DROPOUT SENSITIVITY
G-BAND PULSE
IC2
LIMITER
Y DEMOD
DE EMPHASIS
FL3
LPF
Q101
DE EMPHASIS
TP4
Q102
Y BUFFER
RV6 VIDEO LEVEL
Q105 Q103,104
COLOR PHASE EQ
Q106
BUFFER
IC2
VIDEO AMP
VIDEO AMP
VIDEO AMP
VIDEO AMP
FIX
TP5
SLIT1
Y NOISE CANCELLER I
IC2
VIDEO AMP
LIMITER
HPF
Q107
Y BUFFER
Y NOISE CANCELLER II
Q109
Y AMP
C119
HPF
IC6, L105
LIMITER
RV8 NOISE CANCEL
Q110
Y AMP
Q111 C124
LPF
D101,102
SLICER
RV7 H-COMP MIX
HIGH COMPONENT MIX
PB Y
Q108
Y/C MIX
Q112,113,114
FALSE VD INS AND MUTING
FALSE VD
H; VIDEO MUTE
Q115,116
VIDEO OUTPUT AMP
Q117
VIDEO OUT BUFFER
8-6
RF MODULATOR
TP6
VIDEO OUT
TV OUT
+12V
IC3
FIX
ACC AMP
TP7
FL2
LPF
Q201
CHROMA PHASE EQ
Q202
685KHz CHROMA AMP
Q203
CHROMA BUFFER
Q214
V-BLK
RV11 CONVERTER BALANCE
IC3
FREQ CONV 685KHz→4.43MHz
FL4
BPF
Q204
CHROMA MUTING
ACK OUT (H; B/W)
Q205
BUFFER
TP10
R222
Q206
L; SECAM IN
RV12 CHROMA MIX LEVEL
PB CHROMA
RV9 APC VCO
IC4
1/8
FREQ CONV
SLOPE
COUNTER
LV2
LV3
LV2,3 5.12MHz TUNING
APC 5.12MHz CARRIER
TP16
APC
TP9
Q208
APC TIME CONST SW
V-BLK
TP8
IC3
APC DET
BURST GATE
TP15
REF 4.43MHz
Q306
Q305
MUTING
L; SECAM IN
X1
Q304
REF 4.43MHz OSC
CV1 REF OSC FREQ
REF OSC
SEPARATED SYNC
L211,212 C241,242,243
SYNC DELAY
RV13 APC GAIN
TP17
ACC ERROR
IC3
ACC DET
BURST GATE
Q210
BURST TUNING AMP
Q209
BUFFER
LV1 4.43MHz TUNING
TP11
Q207
ACK OUT (H; B/W)
ACK AMP
ACK DET
4.43MHz OSC
FIELD MEMORY
Q211
RV10 ACC LEVEL
ACC LEVEL SW
SEARCH
D206
V-BLK
Q212
Q213
V-BLK
V-BLK

VA-35B
VP-5040

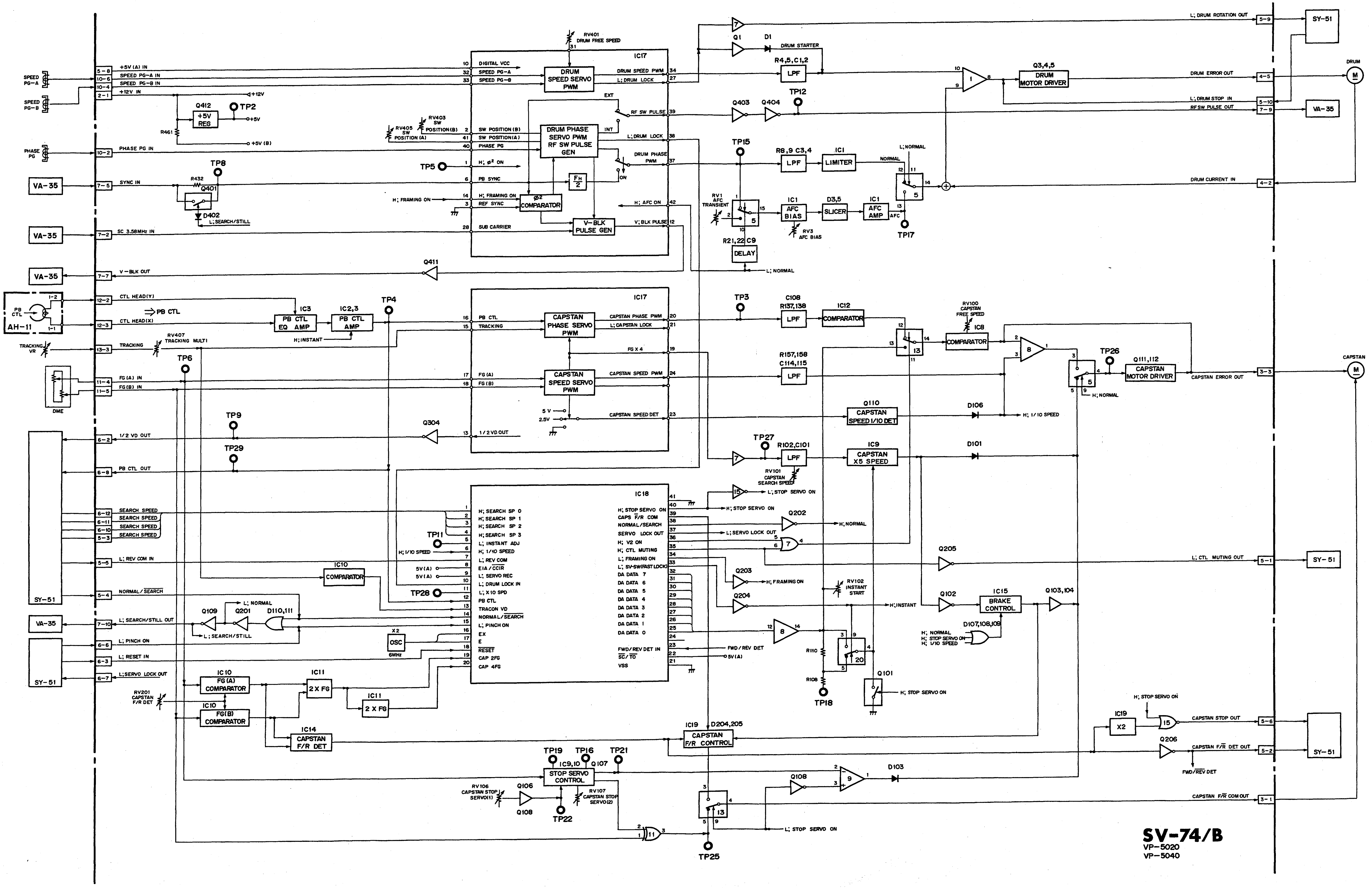
AUDIO SYSTEM
BLOCK DIAGRAM


CH-1 PB
AUDIO HEAD CH-1
2-1
AH-11
6-6
IC901(1/2)
AUDIO CH-1 HEAD AMP
RV901 PB FREQ RESPONSE
RV903 PB OUTPUT LEVEL
Q901
CH-1 MUTING
IC902(1/2)
LINE AMP
4-6
TP901
Q903
OUTPUT BUFFER
CH-1 LINE OUT
4-8
Q952
MONITOR BUFFER
8-2
RF MODULATOR
MONITOR OUT
SY-51
2-2
L;PB MUTING
Q951
CH-2 PB
AUDIO HEAD CH-2
2-6
AH-11
6-1
IC901(2/2)
AUDIO CH-2 HEAD AMP
RV902 PB FREQ RESPONSE
RV904 PB OUTPUT LEVEL
Q902
CH-2 MUTING
IC902(2/2)
LINE AMP
4-4
TP902
Q904
OUTPUT BUFFER
CH-2 LINE OUT
TV OUT
① ⑤
② ⑥
③ ⑦
④ ⑧
VA-35/B(3/3)
MONITOR SELECT
10-3
10-1
10-5
CH-1
MIX
CH-2
KY-91/B

AUDIO

VP-5020
VP-5040

SERVO SYSTEM
BLOCK DIAGRAM


SPEED PG-A
SPEED PG-B
PHASE PG
VA-35
VA-35
VA-35
PB CTL
AH-11
TRACKING VR
DME
SY-51
VA-35
SY-51
+5V (A) IN
SPEED PG-A IN
SPEED PG-B IN
+12V IN
PHASE PG IN
SYNC IN
SC 3.58MHz IN
V-BLK OUT
CTL HEAD(Y)
CTL HEAD(X)
PB CTL
TRACKING
FG (A) IN
FG (B) IN
1/2 VD OUT
PB CTL OUT
SEARCH SPEED
L; REV COM IN
NORMAL/SEARCH
L; SEARCH/STILL OUT
L; PINCH ON
L; RESET IN
L; SERVO LOCK OUT
Q412
+5V REG
TP2
R461
TP8
R432
Q401
D402
L; SEARCH/STILL
TP5
RV401 DRUM FREE SPEED
RV405 SW POSITION (A)
RV403 SW POSITION (B)
IC17
DIGITAL VCC
SPEED PG-A
SPEED PG-B
DRUM SPEED SERVO PWM
SW POSITION (B)
SW POSITION (A)
PHASE PG
DRUM PHASE SERVO PWM RF SW PULSE GEN
H; ø² ON
PB SYNC
H; FRAMING ON
REF SYNC
ø2 COMPARATOR
FH/2
V-BLK PULSE GEN
SUB CARRIER
DRUM SPEED PWM
L; DRUM LOCK
EXT
INT
RF SW PULSE
L; DRUM LOCK
DRUM PHASE PWM
ON
H; AFC ON
V; BLK PULSE
Q411
TP4
IC3 PB CTL EQ AMP
IC2,3 PB CTL AMP
H; INSTANT
RV407 TRACKING MULTI
TP6
CAPSTAN PHASE SERVO PWM
CAPSTAN SPEED SERVO PWM
CAPSTAN PHASE PWM
L; CAPSTAN LOCK
FG X 4
FG (A)
FG (B)
CAPSTAN SPEED PWM
CAPSTAN SPEED DET
1/2 VD OUT
Q304
TP9
TP29
TP11
TP28
IC18
H; SEARCH SP 0
H; SEARCH SP 1
H; SEARCH SP 2
H; SEARCH SP 3
L; INSTANT ADJ
H; 1/10 SPEED
L; REV COM
EIA / CCIR
L; SERVO REC
L; DRUM LOCK IN
L; X10 SPD
PB CTL
TRACON VD
NORMAL/SEARCH
L; PINCH ON
EX
E
RESET
CAP 2FG
CAP 4FG
H; STOP SERVO ON
CAPS F/R COM
NORMAL/SEARCH
SERVO LOCK OUT
H; V2 ON
H; CTL MUTING
L; FRAMING ON
L; SV-SW(FAST LOCK)
DA DATA 7
DA DATA 6
DA DATA 5
DA DATA 4
DA DATA 3
DA DATA 2
DA DATA 1
DA DATA 0
FWD/REV DET IN
SC/TO
VSS
OSC
X2
6MHz
IC10 COMPARATOR
Q109
Q201
D110,111
L; NORMAL
IC10 FG(A) COMPARATOR
IC10 FG(B) COMPARATOR
RV201 CAPSTAN F/R DET
IC11 2 X FG
IC11 2 X FG
IC14 CAPSTAN F/R DET
TP19
TP16
TP21
IC9,10
Q107
STOP SERVO CONTROL
RV106 CAPSTAN STOP SERVO(1)
Q106
Q108
TP22
RV107 CAPSTAN STOP SERVO(2)
IC19 D204,205 CAPSTAN F/R CONTROL
Q108
D103
TP25
L; STOP SERVO ON
Q1
D1
DRUM STARTER
R4,5,C1,2 LPF
TP12
Q403
Q404
TP15
R8,9 C3,4 LPF
IC1 LIMITER
NORMAL
L; NORMAL
RV1 AFC TRANSIENT
IC1 AFC BIAS
D3,5 SLICER
IC1 AFC AMP
AFC
TP17
RV3 AFC BIAS
R21,22 C9 DELAY
L; NORMAL
Q3,4,5 DRUM MOTOR DRIVER
DRUM ERROR OUT
L; DRUM ROTATION OUT
L; DRUM STOP IN
RF SW PULSE OUT
DRUM CURRENT IN
SY-51
VA-35
DRUM
M
TP3
C108 R137,138 LPF
IC12 COMPARATOR
RV100 CAPSTAN FREE SPEED
IC8 COMPARATOR
R157,158 C114,115 LPF
TP26
Q111,112 CAPSTAN MOTOR DRIVER
CAPSTAN ERROR OUT
H; NORMAL
CAPSTAN
M
Q110 CAPSTAN SPEED 1/10 DET
D106
H; 1/10 SPEED
TP27
R102,C101 LPF
RV101 CAPSTAN SEARCH SPEED
IC9 CAPSTAN X5 SPEED
D101
L; STOP SERVO ON
H; STOP SERVO ON
Q202
H; NORMAL
L; SERVO LOCK OUT
Q205
L; CTL MUTING OUT
Q203
H; FRAMING ON
RV102 INSTANT START
Q204
H; INSTANT
Q102
IC15 BRAKE CONTROL
Q103,104
H; NORMAL
H; STOP SERVO ON
H; 1/10 SPEED
D107,108,109
R110
R108
TP18
Q101
H; STOP SERVO ON
FWD/REV DET
5V (A)
H; STOP SERVO ON
IC19 X2
CAPSTAN STOP OUT
Q206
CAPSTAN F/R DET OUT
FWD/REV DET
CAPSTAN F/R COM OUT
SY-51

SV-74/B
VP-5020
VP-5040

SECTION 13
SEMICONDUCTOR ELECTRODES

ICs, transistors and diodes of which functions are equivalently indicated are described here. Therefore, incompatible device names may be described together. For parts replacement, refer to the Spare Parts section in this manual.

IC	PAGE
CX134	13-2
CX135	13-2
CX188	13-2
CX194B-5	13-3
CX859	13-2
HD10116L	13-2
HD14013BP	13-4
HD14538BP	13-9
LA3160	13-2
LA3161	13-2
M54516P	13-2
M54543L	13-7
MB84013B	13-4
MB84013M	13-4
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MB88201-173N	13-7
MB88505-441M	13-5
MB88505-442M	13-5
MB8851H-1015M	13-7
MB88521-144M	13-6
MC10116L	13-2
NJM2903D	13-8
NJM4558D	13-8
NJM4558D-D	13-8
NJM4558S	13-8
TA-7060AP	13-8
TC4001BP	13-8
TC4001UBP	13-8
TC4030BP	13-9
TC4053BP	13-8
TC4069UBP	13-8
TC4071BP	13-8
TC40H000P	13-9
TC4538BP	13-9
TC504013BP	13-9
uPC324C	13-9
uPC339C	13-9
uPC358C	13-9
uPC4558C	13-8

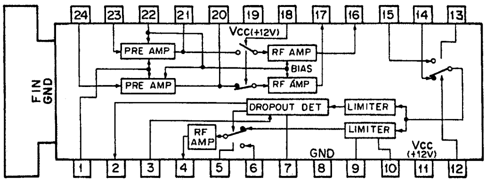
TRANSISTOR	PAGE
2SA1048	13-10
2SA1115	13-10
2SA1175	13-10
2SA1175-K	13-10
2SA768-G	13-10
2SA771-Y	13-10
2SA933S	13-10
2SB733-2	13-10
2SB733-5	13-10
2SC1826-G	13-10
2SC2603-F	13-10
2SC2785-E	13-10
2SC2785-E	13-10
2SC2878-B	13-10
2SC403SP	13-10
2SD1111	13-10
2SD774-3	13-10
2SD789	13-10
2SD880	13-10
2SD894	13-10
2SD998	13-10
2SK152-3	13-10
2SK523-L2	13-10
DTA124XS	13-10
DTC124XS	13-10
DTC144ES	13-10

DIODE	PAGE
10E-2	13-11
1SS119	13-11
BR5104S	13-11
EAA5504S	13-11
EBG5504S	13-11
GL-5HD5	13-11
PS4005-S	13-11
RD3.9E-B	13-11
SPS102-A	13-11
U05G	13-11

CX134A (SONY)

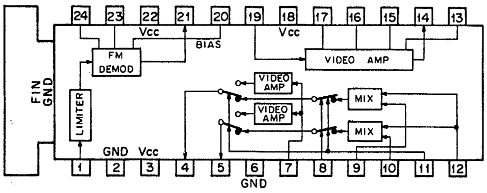
HEAD AMP/DROPOUT COMPENSATOR

— TOP VIEW —


24 23 22 21 20 19 18 17 16 15 14 13
VCC(+12V)
PRE AMP
RF AMP
BIAS
PRE AMP
RF AMP
DROPOUT DET
LIMITER
LIMITER
RF AMP
GND
VCC (+12V)
FIN GND
1 2 3 4 5 6 7 8 9 10 11 12

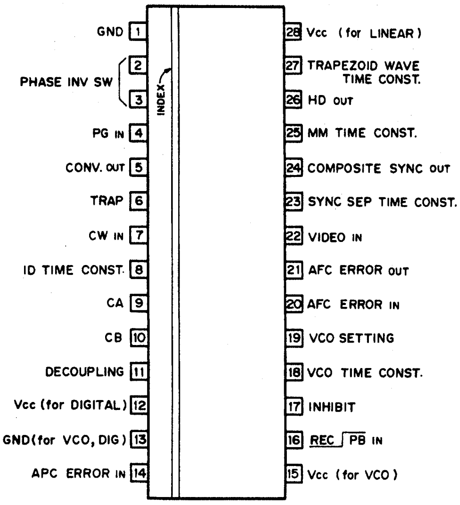
CX135 (SONY)

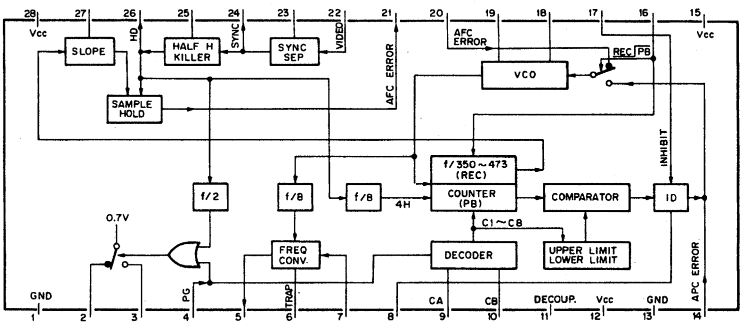
— TOP VIEW —


24 23 22 21 20 19 18 17 16 15 14 13
Vcc
BIAS
Vcc
FM DEMOD
VIDEO AMP
VIDEO AMP
VIDEO AMP
MIX
MIX
LIMITER
FIN GND
GND Vcc
1 2 3 4 5 6 7 8 9 10 11 12
GND

CX 859 (SONY)

—TOP VIEW—


GND 1
PHASE INV SW 2 3
PG IN 4
CONV. OUT 5
TRAP 6
CW IN 7
ID TIME CONST. 8
CA 9
CB 10
DECOUPLING 11
Vcc (for DIGITAL) 12
GND(for VCO, DIG) 13
APC ERROR IN 14
INDEX
28 Vcc (for LINEAR)
27 TRAPEZOID WAVE TIME CONST.
26 HD OUT
25 MM TIME CONST.
24 COMPOSITE SYNC OUT
23 SYNC SEP TIME CONST.
22 VIDEO IN
21 AFC ERROR OUT
20 AFC ERROR IN
19 VCO SETTING
18 VCO TIME CONST.
17 INHIBIT
16 REC / PB IN
15 Vcc (for VCO)


28 27 26 25 24 23 22 21 20 19 18 17 16 15
Vcc
SLOPE
HD
HALF H KILLER
SYNC
SYNC SEP
VIDEO
AFC ERROR
AFC ERROR
REC PB
VCO
Vcc
SAMPLE HOLD
INHIBIT
f/350~473 (REC)
COUNTER (PB)
COMPARATOR
ID
f/2
f/8
f/8
4H
0.7V
C1~C8
FREQ CONV.
DECODER
UPPER LIMIT LOWER LIMIT
APC ERROR
GND
PG
TRAP
CA
CB
DECOUP.
Vcc
GND
1 2 3 4 5 6 7 8 9 10 11 12 13 14

DECODER TRUTH TABLE

CB / CA	LOW	OPEN	HIGH
LOW	C1	C7	—
OPEN	C4	C5	C6
HIGH	—	*C2 C3	C8

* PG : L--- C2
PG : H--- C3

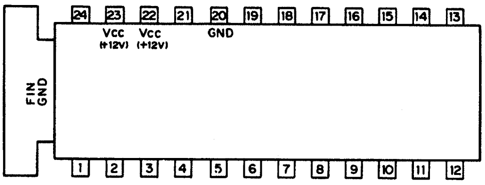
AFC/APC PRESET DATA

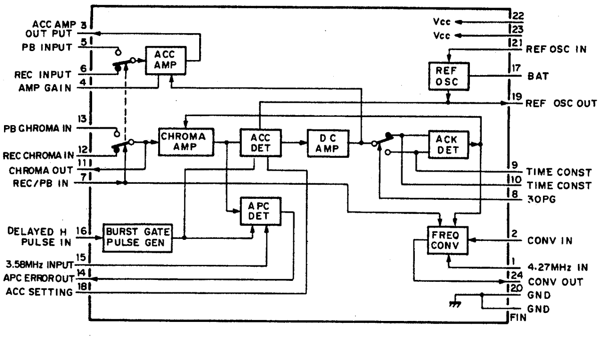
	AFC COUNT DOWN	APC ID COUNT	
		UPPER LIM.	LOWER LIM.
C1	f/473	105	95
C2	f/351	129	119
C3	f/353	137	127
C4	f/351	118	104
C5	f/351	131	117
C6	f/351	144	130
C7	f/350	136	104
C8	———	125	115

CX188

CHROMINANCE SIGNAL PROCESSER

— TOP VIEW —

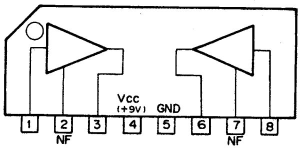

24 23 22 21 20 19 18 17 16 15 14 13
Vcc (+12V)
Vcc (+12V)
GND
FIN GND
1 2 3 4 5 6 7 8 9 10 11 12


ACC AMP OUT PUT 3
PB INPUT 5
REC INPUT 6
AMP GAIN 4
PB CHROMA IN 13
REC CHROMA IN 12
CHROMA OUT 11
REC/PB IN 7
DELAYED H PULSE IN 16
3.58MHz INPUT 15
APC ERROR OUT 14
ACC SETTING 18
ACC AMP
CHROMA AMP
ACC DET
DC AMP
ACK DET
APC DET
BURST GATE PULSE GEN
REF OSC
FREQ CONV
Vcc 22
Vcc 23
21 REF OSC IN
17 BAT
19 REF OSC OUT
9 TIME CONST
10 TIME CONST
8 30PG
2 CONV IN
1 4.27MHz IN
24 CONV OUT
20 GND
GND
FIN

LA3160 (SANYO)
LA3161 (SANYO)

2-CHANNEL PREAMPLIFIER

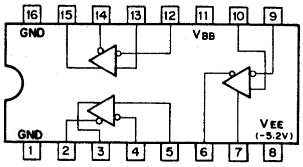
— SIDE VIEW —


Vcc (+9V)
GND
1 2 3 4 5 6 7 8
NF
NF

HD10116 (HITACHI)
MC10116L (MOTOROLA)

ECL DIFFERENTIAL OR/NOR LINE RECEIVER

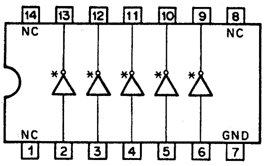
— TOP VIEW —


16 15 14 13 12 11 10 9
GND
VBB
GND
VEE (-5.2V)
1 2 3 4 5 6 7 8

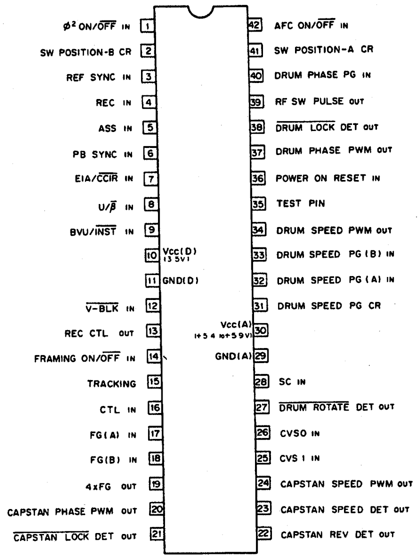
M54516P (MITSUBISHI)

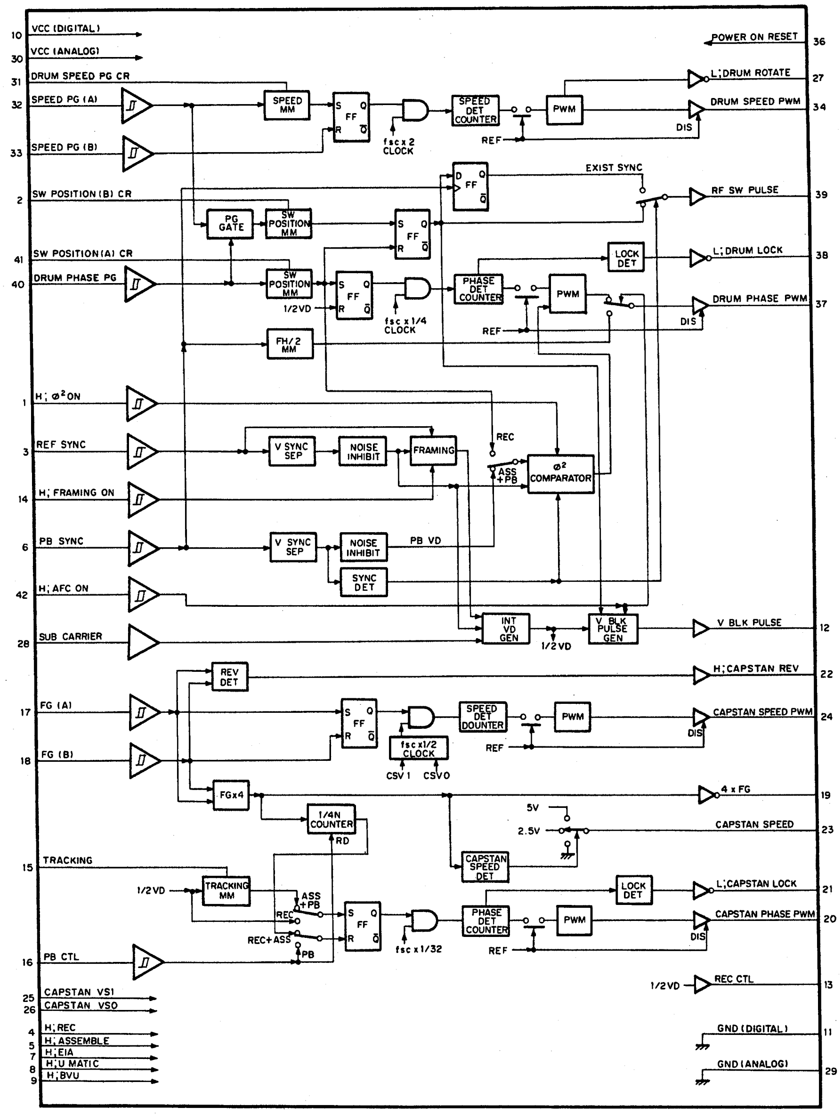
INVERTER WITH OPEN-COLLECTOR
(DARLINGTON-CONNECTED TRANSISTOR ARRAY)

— TOP VIEW —

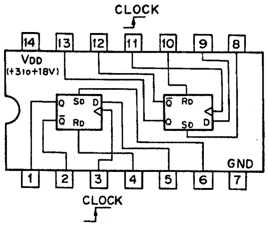

14 13 12 11 10 9 8
NC
NC
*
NC
GND
1 2 3 4 5 6 7

CX194B (SONY)
DRUM/CAPSTAN PWM SERVO
— TOP VIEW —


1 ϕ^2 ON/$\overline{\text{OFF}}$ IN
2 SW POSITION-B CR
3 REF SYNC IN
4 REC IN
5 ASS IN
6 PB SYNC IN
7 EIA/$\overline{\text{CCIR}}$ IN
8 U/$\overline{\beta}$ IN
9 BVU/$\overline{\text{INST}}$ IN
10 Vcc(D) (3.5V)
11 GND(D)
12 $\overline{\text{V-BLK}}$ IN
13 REC CTL OUT
14 FRAMING ON/$\overline{\text{OFF}}$ IN
15 TRACKING
16 CTL IN
17 FG(A) IN
18 FG(B) IN
19 4xFG OUT
20 CAPSTAN PHASE PWM OUT
21 $\overline{\text{CAPSTAN LOCK}}$ DET OUT
42 AFC ON/$\overline{\text{OFF}}$ IN
41 SW POSITION-A CR
40 DRUM PHASE PG IN
39 RF SW PULSE OUT
38 $\overline{\text{DRUM LOCK}}$ DET OUT
37 DRUM PHASE PWM OUT
36 POWER ON RESET IN
35 TEST PIN
34 DRUM SPEED PWM OUT
33 DRUM SPEED PG (B) IN
32 DRUM SPEED PG (A) IN
31 DRUM SPEED PG CR
30 Vcc(A) (+5.4 to +5.9V)
29 GND(A)
28 SC IN
27 $\overline{\text{DRUM ROTATE}}$ DET OUT
26 CVSO IN
25 CVS 1 IN
24 CAPSTAN SPEED PWM OUT
23 CAPSTAN SPEED DET OUT
22 CAPSTAN REV DET OUT


10 VCC (DIGITAL)
30 VCC (ANALOG)
31 DRUM SPEED PG CR
32 SPEED PG (A)
33 SPEED PG (B)
2 SW POSITION (B) CR
41 SW POSITION (A) CR
40 DRUM PHASE PG
1 H; ϕ^2ON
3 REF SYNC
14 H; FRAMING ON
6 PB SYNC
42 H; AFC ON
28 SUB CARRIER
17 FG (A)
18 FG (B)
15 TRACKING
16 PB CTL
25 CAPSTAN VS1
26 CAPSTAN VSO
4 H; REC
5 H; ASSEMBLE
7 H; EIA
8 H; U MATIC
9 H; BVU
SPEED MM
S Q FF R $\overline{Q}$
fsc x 2 CLOCK
SPEED DET COUNTER
PWM
REF
DIS
D Q FF $\overline{Q}$
EXIST SYNC
PG GATE
SW POSITION MM
LOCK DET
PHASE DET COUNTER
1/2VD
fsc x 1/4 CLOCK
FH/2 MM
V SYNC SEP
NOISE INHIBIT
FRAMING
REC
ASS +PB
ϕ^2 COMPARATOR
PB VD
SYNC DET
INT VD GEN
V BLK PULSE GEN
REV DET
SPEED DET DOUNTER
fsc x1/2 CLOCK
CSV 1
CSV 0
FGx4
1/4N COUNTER
RD
5V
2.5V
CAPSTAN SPEED DET
TRACKING MM
REC+ASS
PB
fsc x 1/32
POWER ON RESET 36
L; DRUM ROTATE 27
DRUM SPEED PWM 34
RF SW PULSE 39
L; DRUM LOCK 38
DRUM PHASE PWM 37
V BLK PULSE 12
H; CAPSTAN REV 22
CAPSTAN SPEED PWM 24
4 x FG 19
CAPSTAN SPEED 23
L; CAPSTAN LOCK 21
CAPSTAN PHASE PWM 20
REC CTL 13
GND (DIGITAL) 11
GND (ANALOG) 29

CD4013AE/BE (RCA)
HD14013BP (HITACHI)
MB84013B (FUJITSU)
MB84013M (FUJITSU)
C-MOS D-TYPE FLIP-FLOP WITH DIRECT SET/RESET
— TOP VIEW —


CLOCK
14
13
12
11
10
9
8
VDD (+3to+18V)
Q
SD
D
Q̄
RD
Q̄
RD
Q
SD
D
GND
1
2
3
4
5
6
7
CLOCK

DIRECT R-S FLIP FLOP

SD	RD	Q	$\overline{Q}$
0	0	Qn	$\overline{Qn}$
0	1	0	1
1	0	1	0
1	1	1	1

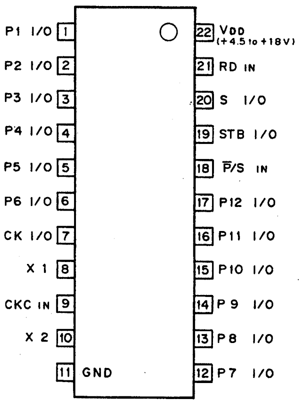
0; LOW LEVEL
1; HIGH LEVEL

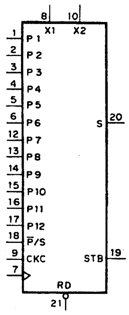
D-TYPE FLIP FLOP

CKn	CKn+1
D	Q
0	0
1	1

CLOCK CK; ⌐
CKn; BEFORE CLOCK
CKn+1; AFTER CLOCK

MB8747 (FUJITSU)
C-MOS SERIAL TO/FROM PARALLEL CONVERTER WITH OSCILLATOR
— TOP VIEW —


P1 I/O 1
P2 I/O 2
P3 I/O 3
P4 I/O 4
P5 I/O 5
P6 I/O 6
CK I/O 7
X 1 8
CKC IN 9
X 2 10
11 GND
22 VDD (+4.5 to +18V)
21 RD IN
20 S I/O
19 STB I/O
18 P̄/S IN
17 P12 I/O
16 P11 I/O
15 P10 I/O
14 P9 I/O
13 P8 I/O
12 P7 I/O


8
10
X1
X2
1 P1
2 P2
3 P3
4 P4
5 P5
6 P6
12 P7
13 P8
14 P9
15 P10
16 P11
17 P12
18 P̄/S
9 CKC
7
S 20
STB 19
RD
21

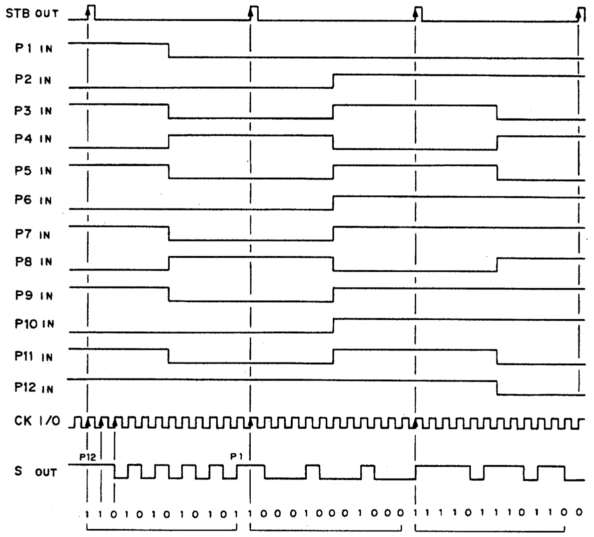
P1 to P12 , PARALLEL DATA IN/OUT
CK , CLOCK IN/OUT
CKC , CLOCK I/O CONTROL IN
X1,X2 , X'TAL
$\overline{P}$/S , PARALLEL/SERIAL CONTROL IN
STB , STROBE
S , SERIAL DATA IN/OUT

CKC	CK
0	OUT
1	IN

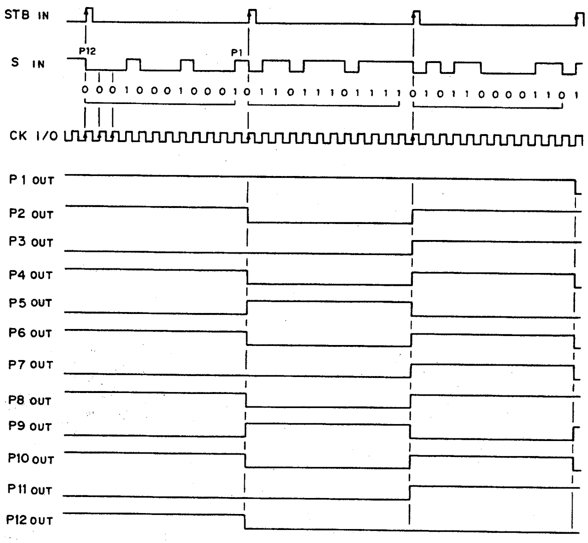
RD	$\overline{P}$/S	MODE	P1toP12	S	STB
0	0	OPEN	IN	HI-Z	OUT
0	1	RESET	0	IN	IN
1	0	P→S	IN	OUT	OUT
1	1	S→P	OUT	IN	IN

0 , LOW LEVEL
1 , HIGH LEVEL
HI-Z , HIGH IMPEDANCE
P→S , PARALLEL→SERIAL CONV
S→P , SERIAL→PARALLEL CONV

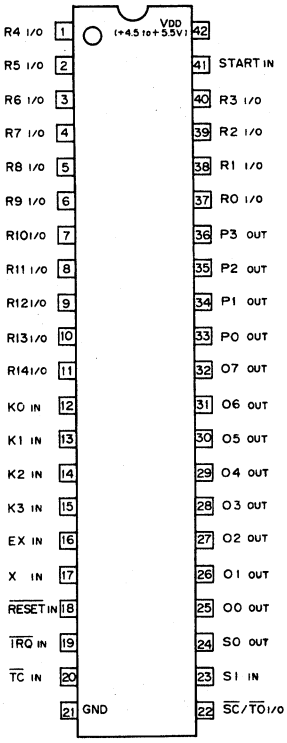
$\overline{P}$/S = 0 RD=1 (PARALLEL → SERIAL CONV)


STB OUT
P1 IN
P2 IN
P3 IN
P4 IN
P5 IN
P6 IN
P7 IN
P8 IN
P9 IN
P10 IN
P11 IN
P12 IN
CK I/O
P12
P1
S OUT
1 1 0 1 0 1 0 1 0 1 0 1 1 0 0 0 1 0 0 0 1 0 0 0 1 1 1 1 0 1 1 1 0 1 1 0 0

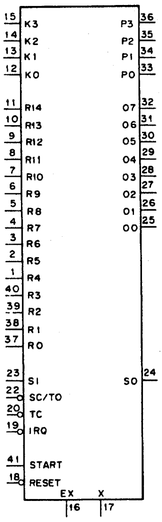
$\overline{P}$/S = 1 RD = 1 (SERIAL → PARALLEL CONV)


STB IN
P12
P1
S IN
0 0 0 1 0 0 0 1 0 0 0 1 0 1 1 0 1 1 1 0 1 1 1 1 0 1 0 1 1 0 0 0 0 1 1 0 1
CK I/O
P1 OUT
P2 OUT
P3 OUT
P4 OUT
P5 OUT
P6 OUT
P7 OUT
P8 OUT
P9 OUT
P10 OUT
P11 OUT
P12 OUT

MB88505P (FUJITSU)
C-MOS 4-BIT ONE-CHIP MICROCOMPUTER
— TOP VIEW —



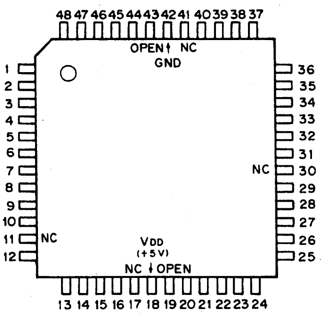
VDD (+4.5 to +5.5V) 42
R4 I/O 1
R5 I/O 2
R6 I/O 3
R7 I/O 4
R8 I/O 5
R9 I/O 6
R10 I/O 7
R11 I/O 8
R12 I/O 9
R13 I/O 10
R14 I/O 11
K0 IN 12
K1 IN 13
K2 IN 14
K3 IN 15
EX IN 16
X IN 17
RESET IN 18
IRQ IN 19
TC IN 20
21 GND
41 START IN
40 R3 I/O
39 R2 I/O
38 R1 I/O
37 R0 I/O
36 P3 OUT
35 P2 OUT
34 P1 OUT
33 P0 OUT
32 O7 OUT
31 O6 OUT
30 O5 OUT
29 O4 OUT
28 O3 OUT
27 O2 OUT
26 O1 OUT
25 O0 OUT
24 SO OUT
23 SI IN
22 SC/TO I/O



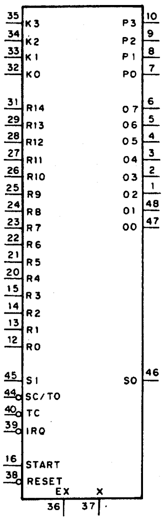
15 K3
14 K2
13 K1
12 K0
11 R14
10 R13
9 R12
8 R11
7 R10
6 R9
5 R8
4 R7
3 R6
2 R5
1 R4
40 R3
39 R2
38 R1
37 R0
23 SI
22 SC/TO
20 TC
19 IRQ
41 START
18 RESET
P3 36
P2 35
P1 34
P0 33
O7 32
O6 31
O5 30
O4 29
O3 28
O2 27
O1 26
O0 25
SO 24
EX 16
X 17

EX ; EXTERNAL CLOCK IN
IRQ ; INTERRUPT REQUEST IN
K0-K3 ; 4-BIT PARALLEL IN
O0-O7 ; 4-BIT PARALLEL OUT
P0-P3 ; 4-BIT PARALLEL OUT
R0-R14 ; DATA IN/OUT
RESET ; RESET IN
SC/TO ; SHIFT CLOCK IN / INT TIMING OUT
SI ; SERIAL DATA IN
SO ; SERIAL DATA OUT
START ; STANDBY OFF IN
TC ; EXTERNAL CLOCK IN FOR COUNTER
X ; CLOCK OUT

— TOP VIEW —

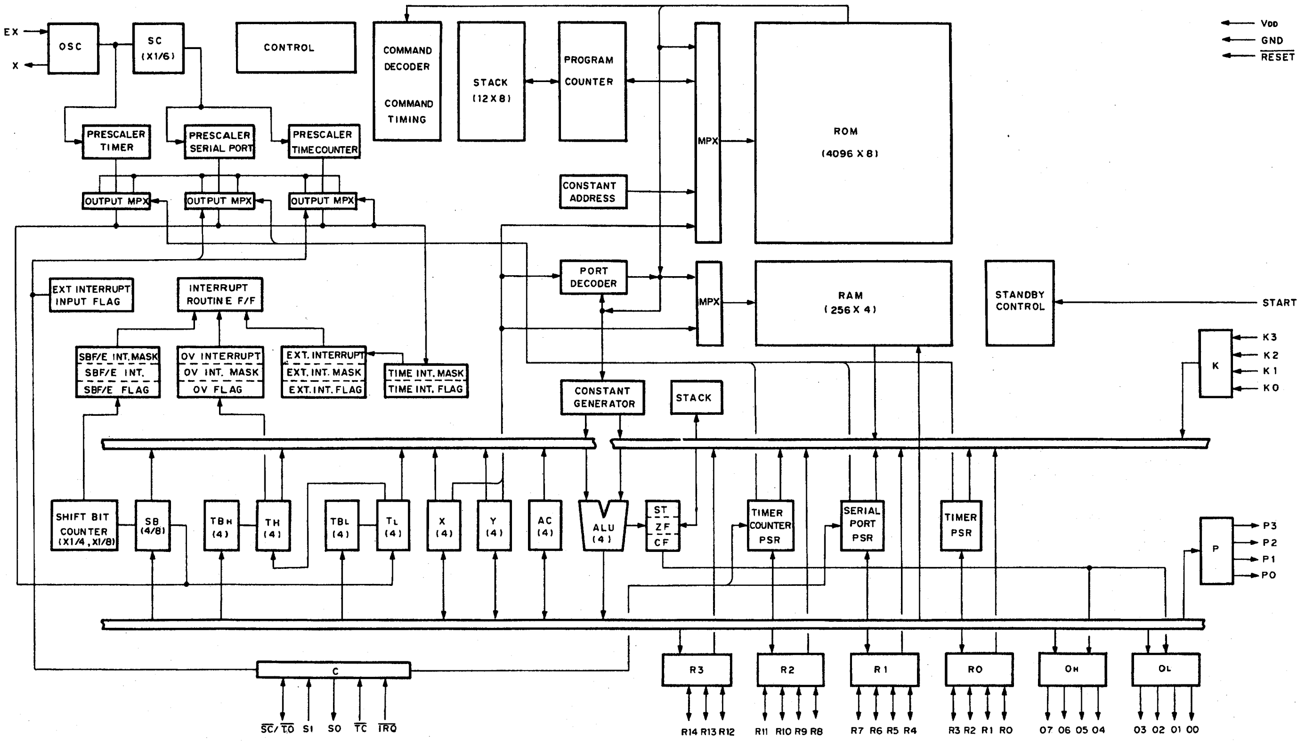


48 47 46 45 44 43 42 41 40 39 38 37
OPEN NC
GND
1
2
3
4
5
6
7
8
9
10
11 NC
12
36
35
34
33
32
31
NC 30
29
28
27
26
25
VDD (+5V)
NC OPEN
13 14 15 16 17 18 19 20 21 22 23 24



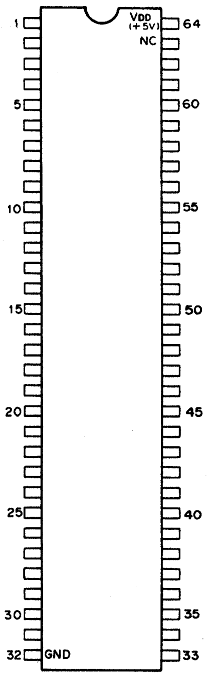
35 K3
34 K2
33 K1
32 K0
31 R14
29 R13
28 R12
27 R11
26 R10
25 R9
24 R8
23 R7
22 R6
21 R5
20 R4
15 R3
14 R2
13 R1
12 R0
45 SI
44 SC/TO
40 TC
39 IRQ
16 START
38 RESET
P3 10
P2 9
P1 8
P0 7
O7 6
O6 5
O5 4
O4 3
O3 2
O2 1
O1 48
O0 47
SO 46
EX 36
X 37

EX ; EXTERNAL CLOCK IN
IRQ , INTERRUPT REQUEST IN
K0-K3 , 4-BIT PARALLEL IN
O0-O7 , 4-BIT PARALLEL OUT
P0-P3 , 4-BIT PARALLEL OUT
R0-R14 , DATA IN/OUT
RESET , RESET IN
SC/TO , SHIFT CLOCK IN/INT TIMING OUT
SI , SERIAL DATA IN
SO , SERIAL DATA OUT
START , STANDBY OFF IN
TC ; EXTERNAL CLOCK IN FOR COUNTER
X ; CLOCK OUT

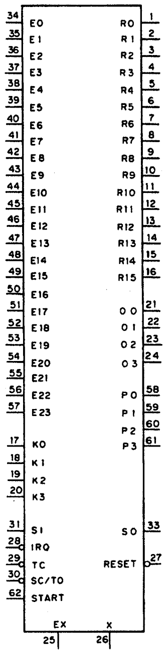


EX
X
OSC
SC (X1/6)
CONTROL
COMMAND DECODER
COMMAND TIMING
STACK (12X8)
PROGRAM COUNTER
MPX
ROM (4096 X 8)
VDD
GND
RESET
PRESCALER TIMER
PRESCALER SERIAL PORT
PRESCALER TIME COUNTER
OUTPUT MPX
OUTPUT MPX
OUTPUT MPX
CONSTANT ADDRESS
PORT DECODER
MPX
RAM (256 X 4)
STANDBY CONTROL
START
EXT INTERRUPT INPUT FLAG
INTERRUPT ROUTINE F/F
SBF/E INT. MASK
SBF/E INT.
SBF/E FLAG
OV INTERRUPT
OV INT. MASK
OV FLAG
EXT. INTERRUPT
EXT. INT. MASK
EXT. INT. FLAG
TIME INT. MASK
TIME INT. FLAG
CONSTANT GENERATOR
STACK
K
K3
K2
K1
K0
SHIFT BIT COUNTER (X1/4, X1/8)
SB (4/8)
TBH (4)
TH (4)
TBL (4)
TL (4)
X (4)
Y (4)
AC (4)
ALU (4)
ST
ZF
CF
TIMER COUNTER PSR
SERIAL PORT PSR
TIMER PSR
P
P3
P2
P1
P0
C
SC/TO SI SO TC IRQ
R3
R2
R1
R0
OH
OL
R14 R13 R12
R11 R10 R9 R8
R7 R6 R5 R4
R3 R2 R1 R0
O7 O6 O5 O4
O3 O2 O1 O0

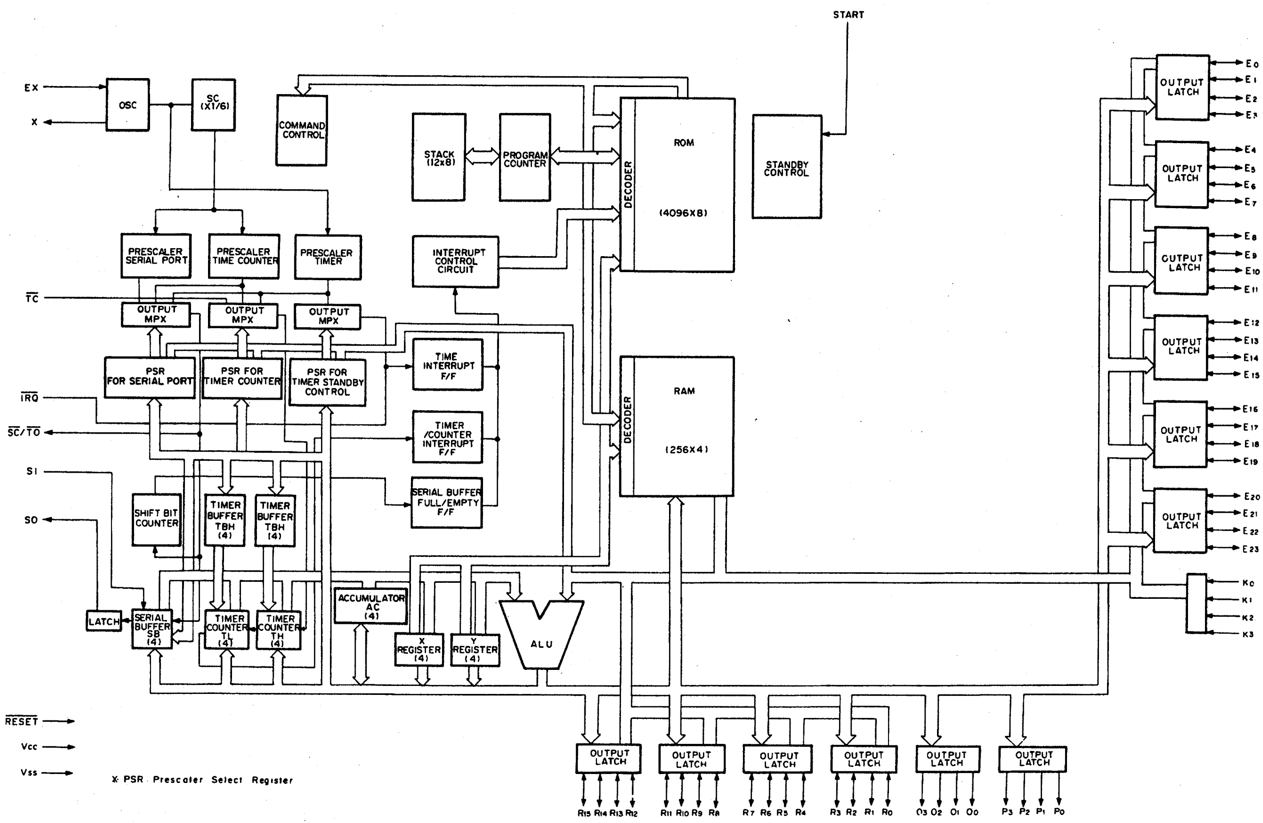
MB88521P (FUJITSU)
C-MOS 4-BIT ONE-CHIP MICROCOMPUTER
— TOP VIEW —


1
5
10
15
20
25
30
32
GND
VDD (+5V)
NC
64
60
55
50
45
40
35
33

PIN NO.	IN	OUT	SYMBOL	PIN NO	IN	OUT	SYMBOL
1	○	○	R0	33		○	S0
2	○	○	R1	34	○	○	E0
3	○	○	R2	35	○	○	E1
4	○	○	R3	36	○	○	E2
5	○	○	R4	37	○	○	E3
6	○	○	R5	38	○	○	E4
7	○	○	R6	39	○	○	E5
8	○	○	R7	40	○	○	E6
9	○	○	R8	41	○	○	E7
10	○	○	R9	42	○	○	E8
11	○	○	R10	43	○	○	E9
12	○	○	R11	44	○	○	E10
13	○	○	R12	45	○	○	E11
14	○	○	R13	46	○	○	E12
15	○	○	R14	47	○	○	E13
16	○	○	R15	48	○	○	E14
17	○		K0	49	○	○	E15
18	○		K1	50	○	○	E16
19	○		K2	51	○	○	E17
20	○		K3	52	○	○	E18
21		○	00	53	○	○	E19
22		○	01	54	○	○	E20
23		○	02	55	○	○	E21
24		○	03	56	○	○	E22
25	○		EX	57	○	○	E23
26		○	X	58		○	P0
27	○	○	$\overline{RESET}$	59		○	P1
28	○		$\overline{IRQ}$	60		○	P2
29	○		$\overline{TC}$	61		○	P3
30	○	○	$\overline{SC}/\overline{TO}$	62	○		START
31	○		SI	63	—	—	——
32			GND	64			VDD

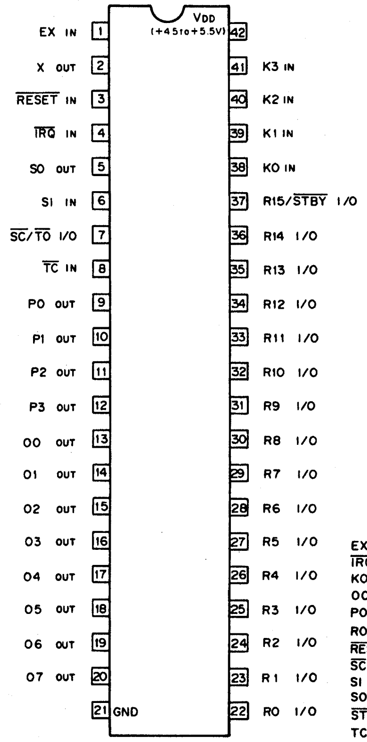

34 E0
35 E1
36 E2
37 E3
38 E4
39 E5
40 E6
41 E7
42 E8
43 E9
44 E10
45 E11
46 E12
47 E13
48 E14
49 E15
50 E16
51 E17
52 E18
53 E19
54 E20
55 E21
56 E22
57 E23
17 K0
18 K1
19 K2
20 K3
31 SI
28 IRQ
29 TC
30 SC/TO
62 START
R0 1
R1 2
R2 3
R3 4
R4 5
R5 6
R6 7
R7 8
R8 9
R9 10
R10 11
R11 12
R12 13
R13 14
R14 15
R15 16
O0 21
O1 22
O2 23
O3 24
P0 58
P1 59
P2 60
P3 61
SO 33
RESET 27
EX 25
X 26

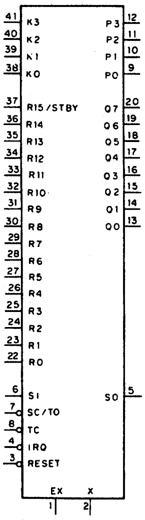
E0-E23 ; I/O PORT (E) IN/OUT
EX ; EXTERNAL CLOCK IN
$\overline{IRQ}$; EXTERNAL INTERRUPT REQUEST IN
K0-K3 ; INPUT PORT (K) IN
O0-O3 ; OUTPUT PORT(O) OUT
P0-P3 ; OUTPUT PORT(P) OUT
R0-R15 ; I/O PORT (R) IN/OUT
$\overline{RESET}$; RESET IN
$\overline{SC}/\overline{TO}$; SHIFT CLOCK IN/TIMING OUT
SI ; SERIAL DATA IN
START ; STANDBY RELEASE IN
SO ; SERAL DATA OUT
$\overline{TC}$; EXTERNAL CLOCK IN
X ; CLOCK OUT


START
EX
X
OSC
SC (X1/6)
COMMAND CONTROL
STACK (12x8)
PROGRAM COUNTER
DECODER
ROM
(4096X8)
STANDBY CONTROL
PRESCALER SERIAL PORT
PRESCALER TIME COUNTER
PRESCALER TIMER
INTERRUPT CONTROL CIRCUIT
TC
OUTPUT MPX
OUTPUT MPX
OUTPUT MPX
PSR FOR SERIAL PORT
PSR FOR TIMER COUNTER
PSR FOR TIMER STANDBY CONTROL
TIME INTERRUPT F/F
IRQ
SC/TO
TIMER /COUNTER INTERRUPT F/F
DECODER
RAM
(256X4)
SI
SO
SHIFT BIT COUNTER
TIMER BUFFER TBH (4)
TIMER BUFFER TBH (4)
SERIAL BUFFER FULL/EMPTY F/F
LATCH
SERIAL BUFFER SB (4)
TIMER COUNTER TL (4)
TIMER COUNTER TH (4)
ACCUMULATOR AC (4)
X REGISTER (4)
Y REGISTER (4)
ALU
OUTPUT LATCH
E0
E1
E2
E3
E4
E5
E6
E7
E8
E9
E10
E11
E12
E13
E14
E15
E16
E17
E18
E19
E20
E21
E22
E23
K0
K1
K2
K3
RESET
Vcc
Vss
X PSR Prescaler Select Register
R15 R14 R13 R12
R11 R10 R9 R8
R7 R6 R5 R4
R3 R2 R1 R0
O3 O2 O1 O0
P3 P2 P1 P0

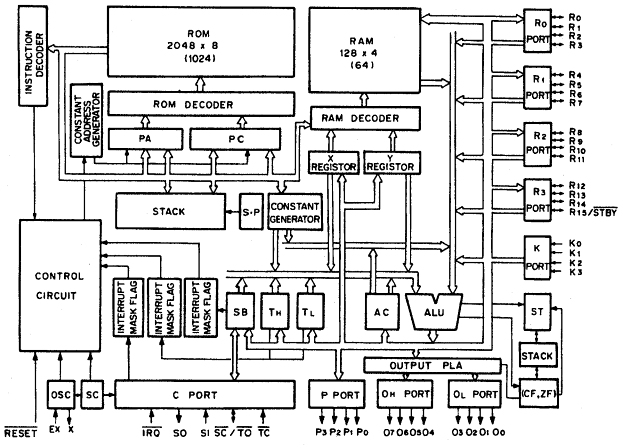
MB8851H (FUJITSU)

C-MOS 4-BIT ONE-CHIP MICROCOMPUTER
— TOP VIEW —


EX IN 1
X OUT 2
RESET IN 3
IRQ IN 4
SO OUT 5
SI IN 6
SC/TO I/O 7
TC IN 8
P0 OUT 9
P1 OUT 10
P2 OUT 11
P3 OUT 12
O0 OUT 13
O1 OUT 14
O2 OUT 15
O3 OUT 16
O4 OUT 17
O5 OUT 18
O6 OUT 19
O7 OUT 20
21 GND
VDD (+4.5to+5.5V) 42
41 K3 IN
40 K2 IN
39 K1 IN
38 K0 IN
37 R15/STBY I/O
36 R14 I/O
35 R13 I/O
34 R12 I/O
33 R11 I/O
32 R10 I/O
31 R9 I/O
30 R8 I/O
29 R7 I/O
28 R6 I/O
27 R5 I/O
26 R4 I/O
25 R3 I/O
24 R2 I/O
23 R1 I/O
22 R0 I/O

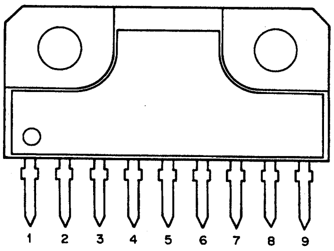

41 K3
40 K2
39 K1
38 K0
37 R15/STBY
36 R14
35 R13
34 R12
33 R11
32 R10
31 R9
30 R8
29 R7
28 R6
27 R5
26 R4
25 R3
24 R2
23 R1
22 R0
6 SI
7 SC/TO
8 TC
4 IRQ
3 RESET
EX 1
X 2
P3 12
P2 11
P1 10
P0 9
O7 20
O6 19
O5 18
O4 17
O3 16
O2 15
O1 14
O0 13
SO 5

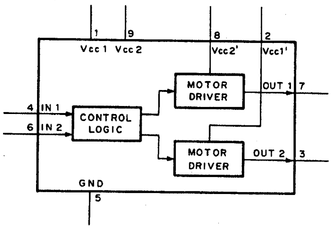
EX	;	EXTERNAL CLOCK IN
IRQ	;	INTERRUPT IN
K0-K3	;	4-BIT PARALLEL IN
O0-O7	;	PARALLEL OUT/8-BIT PLA OUT
P0-P3	;	4-BIT PARALLEL OUT
R0-R15	;	DATA I/O
RESET	;	RESET IN
SC/TO	;	SHIFT CLOCK IN/INT TIMING OUT
SI	;	SERIAL DATA IN
SO	;	SERIAL DATA OUT
STBY	;	STAND-BY IN
TC	;	TIMER COUNTER
X	;	CLOCK OUT


INSTRUCTION DECODER
ROM 2048 x 8 (1024)
RAM 128 x 4 (64)
CONSTANT ADDRESS GENERATOR
ROM DECODER
PA
PC
RAM DECODER
X REGISTOR
Y REGISTOR
STACK
S-P
CONSTANT GENERATOR
CONTROL CIRCUIT
INTERRUPT MASK FLAG
INTERRUPT MASK FLAG
INTERRUPT MASK FLAG
SB
TH
TL
AC
ALU
ST
STACK
OUTPUT PLA
(CF,ZF)
OSC
SC
C PORT
P PORT
OH PORT
OL PORT
R0 PORT
R1 PORT
R2 PORT
R3 PORT
K PORT
R0 R1 R2 R3
R4 R5 R6 R7
R8 R9 R10 R11
R12 R13 R14 R15/STBY
K0 K1 K2 K3
RESET EX X
IRQ SO SI SC/TO TC
P3 P2 P1 P0
O7 O6 O5 O4
O3 O2 O1 O0

M54543L (MITSUBISHI)

BI-DIRECTIONAL MOTOR DRIVER
— SIDE VIEW —



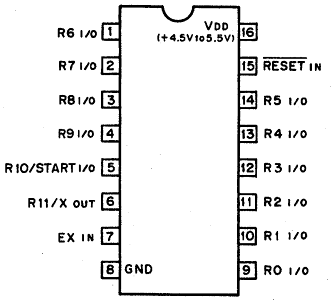

1
9
8
2
Vcc 1
Vcc 2
Vcc2'
Vcc1'
4 IN 1
6 IN 2
CONTROL LOGIC
MOTOR DRIVER
MOTOR DRIVER
OUT 1 7
OUT 2 3
GND
5

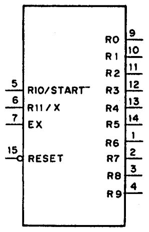
IN 1	IN 2	OUT 1	OUT 2	MODE
0	0	Z	Z	NO OPERATION
1	0	1	0	ROTATION
0	1	0	1	REVERSE ROTATION
1	1	0	0	BRAKE

0 : LOW LEVEL
1 : HIGH LEVEL
Z : HIGH IMPEDANCE

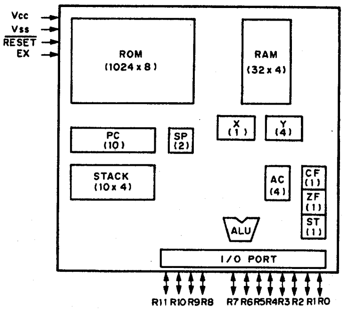
MB88201-173N (FUJITSU)

C-MOS 4 BIT MICROCOMPUTER
— TOP VIEW —

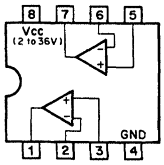

R6 I/O 1
R7 I/O 2
R8 I/O 3
R9 I/O 4
R10/START I/O 5
R11/X OUT 6
EX IN 7
8 GND
VDD (+4.5Vto5.5V) 16
15 RESET IN
14 R5 I/O
13 R4 I/O
12 R3 I/O
11 R2 I/O
10 R1 I/O
9 R0 I/O


5 R10/START
6 R11/X
7 EX
15 RESET
R0 9
R1 10
R2 11
R3 12
R4 13
R5 14
R6 1
R7 2
R8 3
R9 4

EX	;	EXTERNAL X'TAL IN
R0-R11	;	I/O PORT(R) IN/OUT
RESET	;	RESET IN
START	;	STANDBY RELEASE IN
R11/X	;	EXT CLOCK IN/INT CLOCK OUT

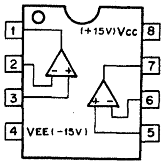

Vcc
Vss
RESET
EX
ROM (1024 x 8)
RAM (32 x 4)
X (1)
Y (4)
PC (10)
SP (2)
STACK (10 x 4)
AC (4)
CF (1)
ZF (1)
ST (1)
ALU
I/O PORT
R11 R10 R9 R8 R7 R6 R5 R4 R3 R2 R1 R0

NJM2903D (JRC)
VOLTAGE COMPARATOR
— TOP VIEW —



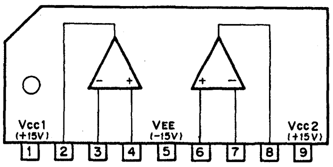
8
7
6
5
Vcc
(2 to 36V)
GND
1
2
3
4

NJM4558D (JRC)
uPC4558C (NEC)
OPERATIONAL AMPLIFIER
— TOP VIEW —



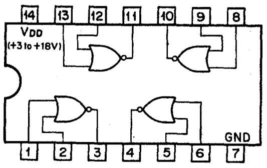
1
2
3
4
VEE (-15V)
(+15V) Vcc
8
7
6
5

NJM4558S (JRC)
HIGH PERFORMANCE DUAL OPERATIONAL AMPLIFIER
— SIDE VIEW —

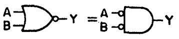


Vcc1
(+15V)
VEE
(-15V)
Vcc2
(+15V)
1
2
3
4
5
6
7
8
9

TC4001BP (TOSHIBA)
TC4001UBP (TOSHIBA)
C-MOS 2-INPUT NOR GATE
— TOP VIEW —



14
13
12
11
10
9
8
VDD
(+3 to +18V)
GND
1
2
3
4
5
6
7

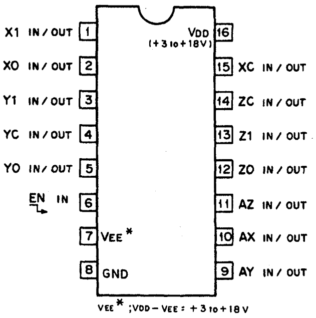


$Y = \overline{A + B} = \overline{A} \cdot \overline{B}$

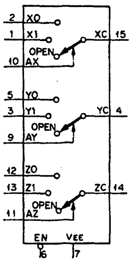
A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

0; LOW LEVEL
1; HIGH LEVEL

HD14053BP (HITACHI)
TC4053BP (TOSHIBA)
C-MOS 2-CHANNEL MULTIPLEXER/DEMULTIPLEXER
— TOP VIEW —



X1 IN / OUT 1
X0 IN / OUT 2
Y1 IN / OUT 3
YC IN / OUT 4
Y0 IN / OUT 5
EN IN 6
7 VEE*
8 GND
VDD (+3 to +18V) 16
15 XC IN / OUT
14 ZC IN / OUT
13 Z1 IN / OUT
12 Z0 IN / OUT
11 AZ IN / OUT
10 AX IN / OUT
9 AY IN / OUT
VEE*; VDD – VEE: +3 to +18 V

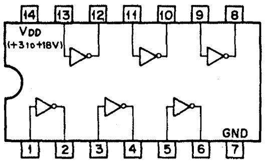


2 X0
1 X1
XC 15
OPEN
10 AX
5 Y0
3 Y1
YC 4
OPEN
9 AY
12 Z0
13 Z1
ZC 14
OPEN
11 AZ
EN
VEE
6
7

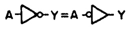
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE.

CONT. INPUTS		ON CHANNEL
EN	A (X,Y,Z,)	
0	0	0
0	1	1
1	X	OPEN

HD14069BP (HITACHI)
MB84069UB (FUJITSU)
TC4069UBP (TOSHIBA)
uPD4069UBC (NEC)
C-MOS INVERTER
— TOP VIEW —



14
13
12
11
10
9
8
VDD
(+3 to +18V)
GND
1
2
3
4
5
6
7

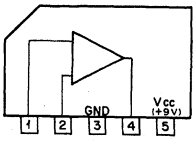


$Y = \overline{A}$

A	Y
0	1
1	0

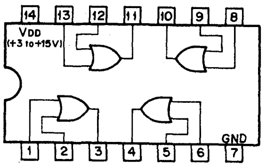
0; LOW LEVEL
1; HIGH LEVEL

TA7060AP (TOSHIBA)
TA7060P (TOSHIBA)
LINEAR AMP
— SIDE VIEW —

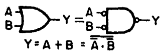


GND
Vcc
(+9V)
1
2
3
4
5

MC14071BCP (MOTOROLA)
TC4071BP (TOSHIBA)
C-MOS 2-INPUT OR GATE
— TOP VIEW —



14
13
12
11
10
9
8
VDD
(+3 to +15V)
GND
1
2
3
4
5
6
7

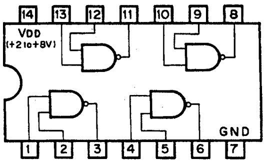


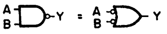
$Y = A + B = \overline{\overline{A} \cdot \overline{B}}$

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

0; LOW LEVEL
1; HIGH LEVEL

TC40H000P (TOSHIBA)
C-MOS 2-INPUT NAND GATE
— TOP VIEW —


14
13
12
11
10
9
8
VDD
(+2 to+8V)
GND
1
2
3
4
5
6
7

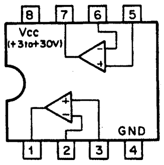


$Y = \overline{A \cdot B} = \bar{A} + \bar{B}$

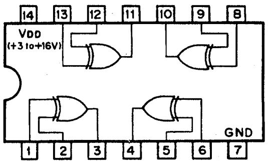
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

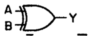
0; LOW LEVEL
1; HIGH LEVEL

uPC358C (NEC)
DUAL OPERATIONAL AMPLIFIERS
— TOP VIEW —


8
7
6
5
Vcc
(+3 to+30V)
GND
1
2
3
4

TC4030BP (TOSHIBA)
C-MOS EXCLUSIVE OR GATE
— TOP VIEW —


14
13
12
11
10
9
8
VDD
(+3 to+16V)
GND
1
2
3
4
5
6
7

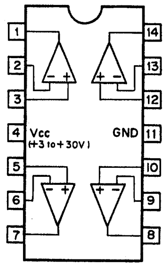


$Y = \bar{A} \cdot B + A \cdot \bar{B}$

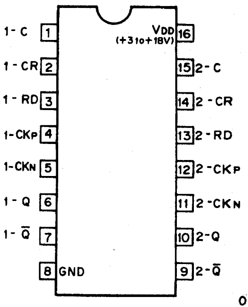
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	0

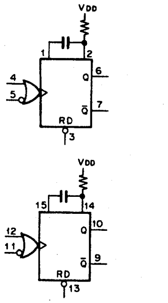
0: LOW LEVEL
1: HIGH LEVEL

uPC324C (NEC)
QUAD. OP AMPLIFIER
— TOP VIEW —


1
2
3
4
5
6
7
14
13
12
11
10
9
8
Vcc
(+3 to+30V)
GND

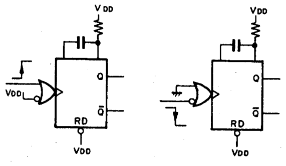
HD14538BP (HITACHI)
MC14538BCP (MOTOROLA)
TC4538BP (TOSHIBA)
C-MOS DUAL RETRIGGERABLE/NON-RETRIGGERABLE
MONOSTABLE MULTIVIBRATOR
— TOP VIEW —


1-C 1
1-CR 2
1-RD 3
1-CKP 4
1-CKN 5
1-Q 6
1-Q̄ 7
8 GND
VDD (+3 to+18V) 16
15 2-C
14 2-CR
13 2-RD
12 2-CKP
11 2-CKN
10 2-Q
9 2-Q̄

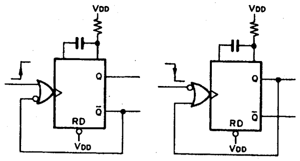

VDD
1
2
4
5
Q 6
Q̄ 7
RD
3
VDD
15
14
12
11
Q 10
Q̄ 9
RD
13

OUTPUT PULSE WIDTH=CR

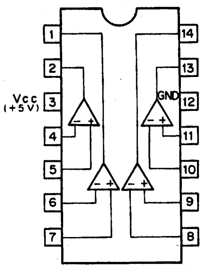
RETRIGGERABLE M.M.V


VDD
VDD
Q
Q̄
RD
VDD
VDD
Q
Q̄
RD
VDD

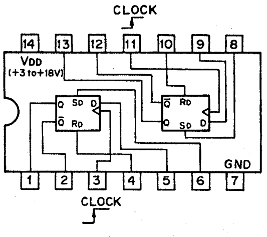
NON-RETRIGGERABLE M.M.V


VDD
VDD
Q
Q̄
RD
VDD
Q
Q̄
RD
VDD

uPC339C (NEC)
COMPARATOR
— TOP VIEW —


1
2
Vcc
(+5V) 3
4
5
6
7
14
13
GND 12
11
10
9
8

TC504013BP (TOSHIBA)
C-MOS D-TYPE FLIP FLOP WITH DIRECT SET/RESET
— TOP VIEW —


CLOCK
14
13
12
11
10
9
8
VDD
(+3 to+18V)
Q SD D
Q̄ RD
Q̄ RD
Q SD D
GND
1
2
3
4
5
6
7
CLOCK

DIRECT R-S FLIP FLOP

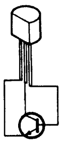
SD	RD	Q	$\bar{Q}$
0	0	Qn	$\bar{Q}$n
0	1	0	1
1	0	1	0
1	1	0	1

D-TYPE FLIP FLOP

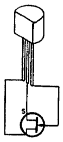
CKn	CKn+1
D	Q
0	0
1	1

CLOCK CK; ⎍
CKn; BEFORE CLOCK
CKn+1; AFTER CLOCK

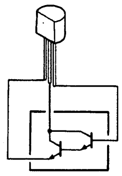
0; LOW LEVEL
1; HIGH LEVEL



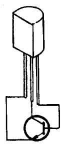
2SC1740
2SC2878
2SC3068



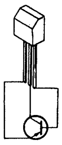
2SK152
2SK523



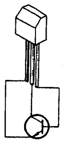
2SD1111



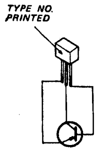
2SD789



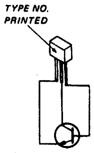
2SB733



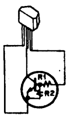
2SD774


TYPE NO. PRINTED

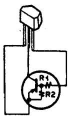
2SA1175
2SA1175F


TYPE NO. PRINTED

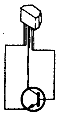
2SC2785E
2SC2785F
2SC2785K



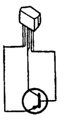
DTC124XS (R1=22K, R2=47K)
DTC144ES (R1=47K, R2=47K)



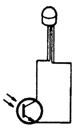
DTA124XS (R1=22K, R2=47K)



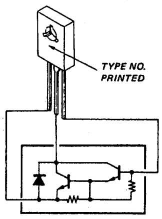
2SC1740S
2SC2458
2SC2603
2SC2603G
2SC403SP



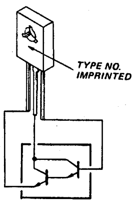
2SA1048
2SA1115
2SA933S



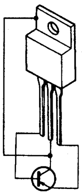
SPS102


TYPE NO. PRINTED

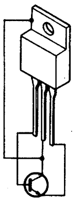
2SD998


TYPE NO. IMPRINTED

2SD894



2SA768
2SA771



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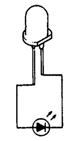
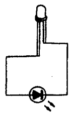
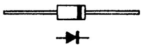
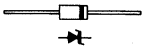
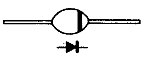
2SD880

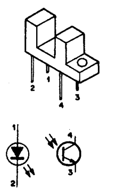

EAA5504S ; AMBER
EBG5504S ; GREEN
GL-5HD5 ; RED


BR5104S ; RED


10E-2
11E2
1SS119
1SS133
1SS148
ERB12-? ?
SIB01-02






PS4005
2
1
4
3
1
2
4
3

The circuit diagram of each IC is obtained from the IC data book published by the manufacturer.

SECTION 14
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

CIRCUIT FUNCTION OF THE PRINTED CIRCUIT BOARD

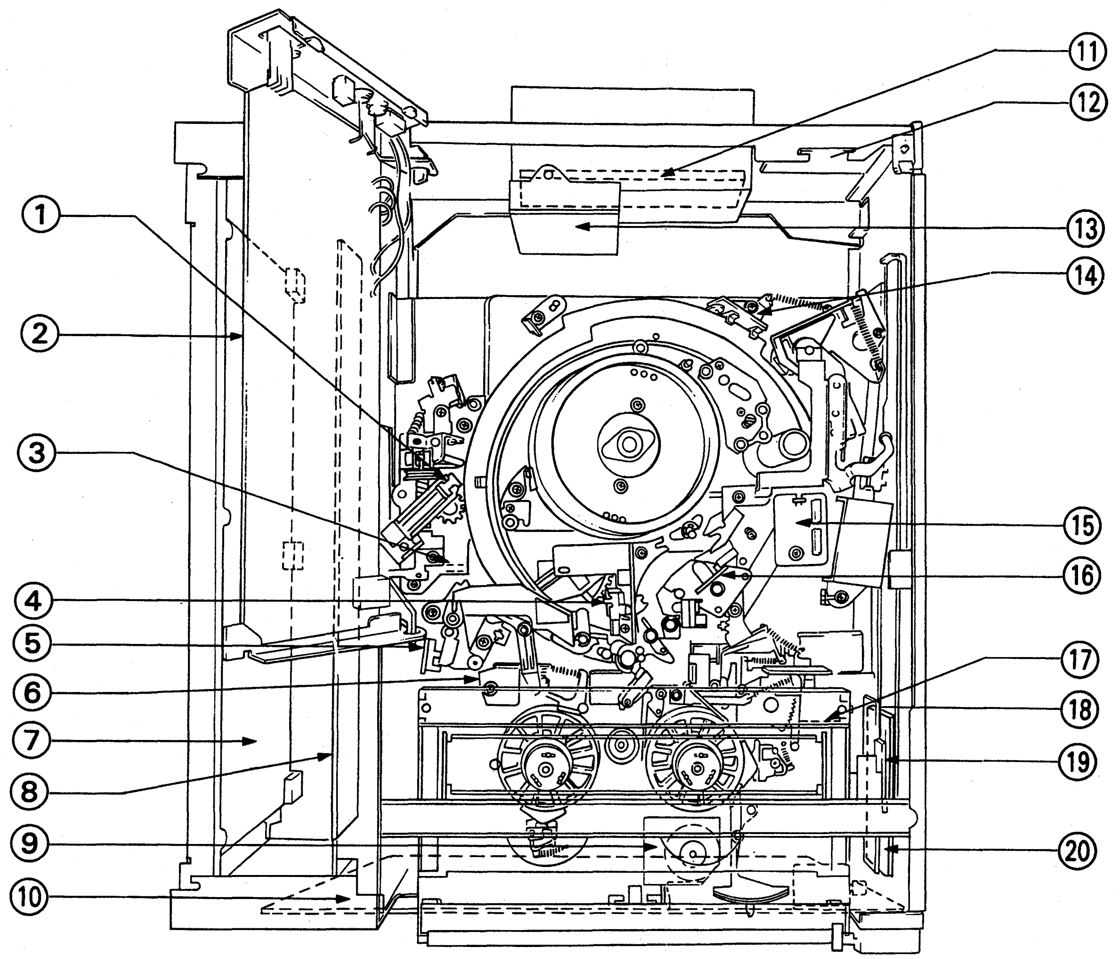
The circuit imformation is provided below.

SYSTEM	BOARD	CIRCUIT FUNCTION
VIDEO	VA-35B	Video Demodulator
AUDIO	AH-11	Audio PB Head
	VA-35B	Audio PB Amplifier
SERVO	AH-11	CTL PB Head
	EC-23	FR CTL PB Head
	PT-9	Reel Motor Driver
	SV-74B	Drum / Capstan Servo
POWER	AC-65B	AC Input
	DC-24B	DC Supply / Fuse
	UR-14E	Switching Regulator
KEY	KY-91B	Function Key / Display
SYSTEM CONTROL	PD-29	Pinch, S-idler, S-brake, Search, Skew Solenoid
	PD-30	T-idler, T-brake Solenoid
	PH-5	Tape Beginning / End Detector
	SY-51	System Control
OTHERS	CC-22	Cassette Compartment Switch / Motor
	CC-23	
	CC-24	
	LM-13	Threading Motor
	PTC-16	S-reel Rotation Detector T-reel Rotation Detector
	PTC-17	Threading Ring Detector
	RM-39	Reel Motor
	SE-46	Tension Regulator
	SW-50	FR Unthread End Detector
	TG-22	Tension Regulator LED

LOCATION

LOCATION OF THE PRINTED CIRCUIT BOARD

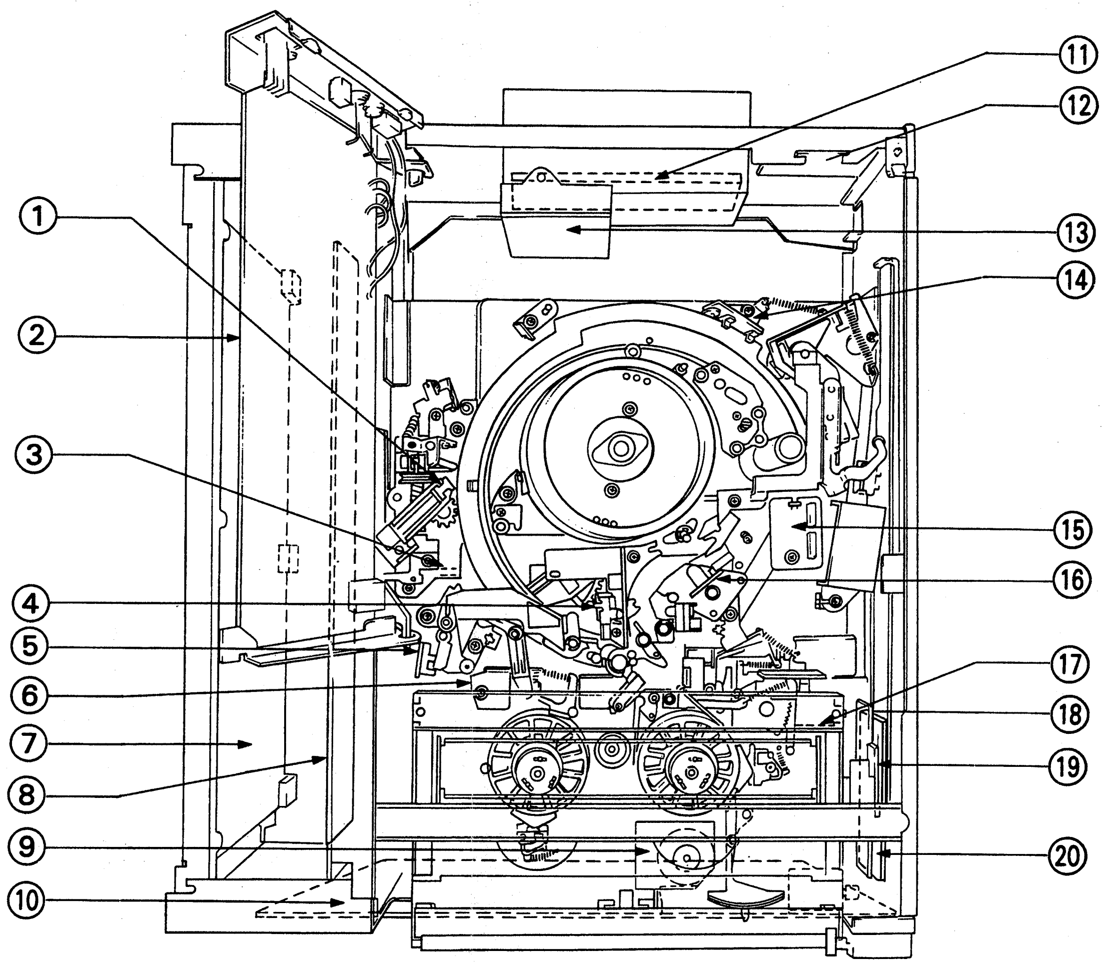
(TOP VIEW)



1	PH-5 Board	11	UR-14E
2	VA-35B Board	12	AC-65B Board
3	LM-13 Board	13	DC-24B Board
4	PH-5 Board	14	PTC-17 Board
5	SW-50 Board	15	AH-11 Board
6	SE-46 Board	16	EC-23 Board
7	SV-74B Board	17	CC-23 Board
8	SY-51 Board	18	CC-22 Board
9	RM-39 Board	19	CC-24 Board
10	KY-91B Board	20	PD-29 Board

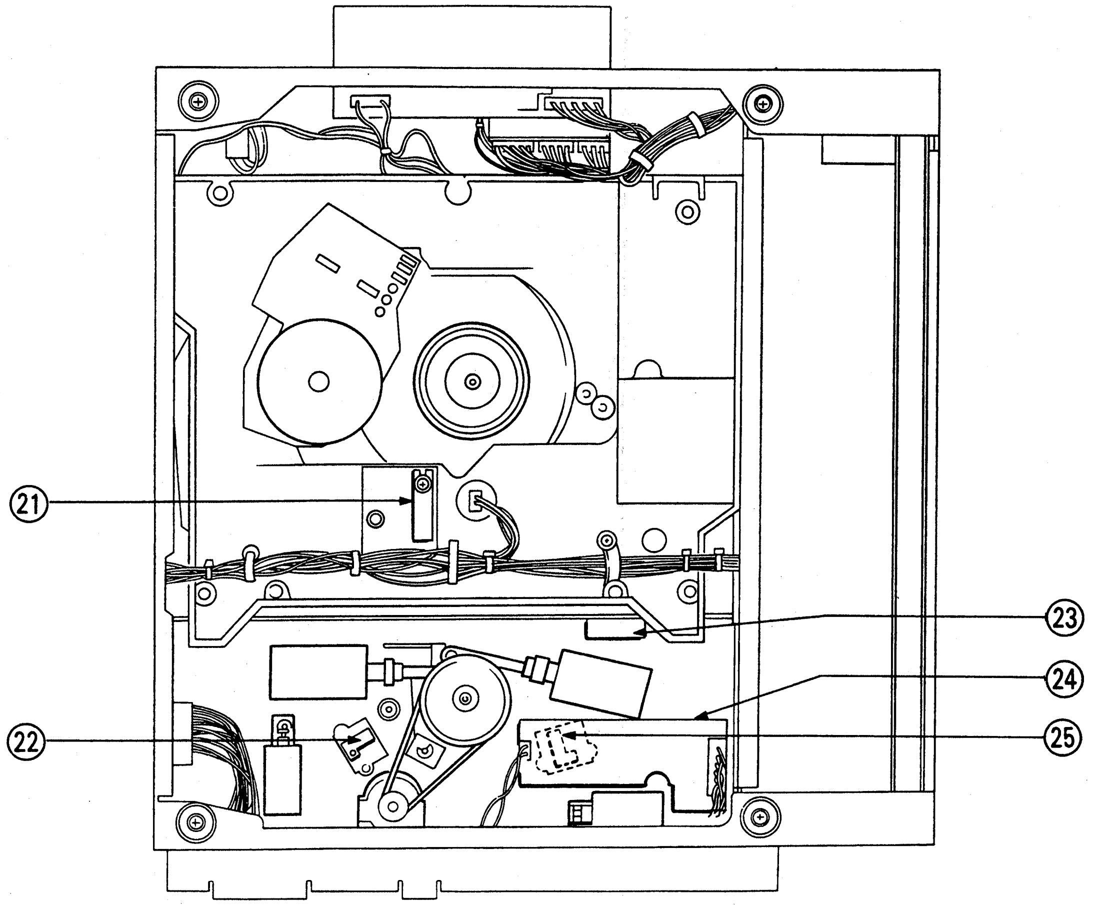
LOCATION OF THE PRINTED CIRCUIT BOARD

〈TOP VIEW〉



1	PH-5 Board	11	UR-14E
2	VA-35B Board	12	AC-65B Board
3	LM-13 Board	13	DC-24B Board
4	PH-5 Board	14	PTC-17 Board
5	SW-50 Board	15	AH-11 Board
6	SE-46 Board	16	EC-23 Board
7	SV-74B Board	17	CC-23 Board
8	SY-51 Board	18	CC-22 Board
9	RM-39 Board	19	CC-24 Board
10	KY-91B Board	20	PD-29 Board

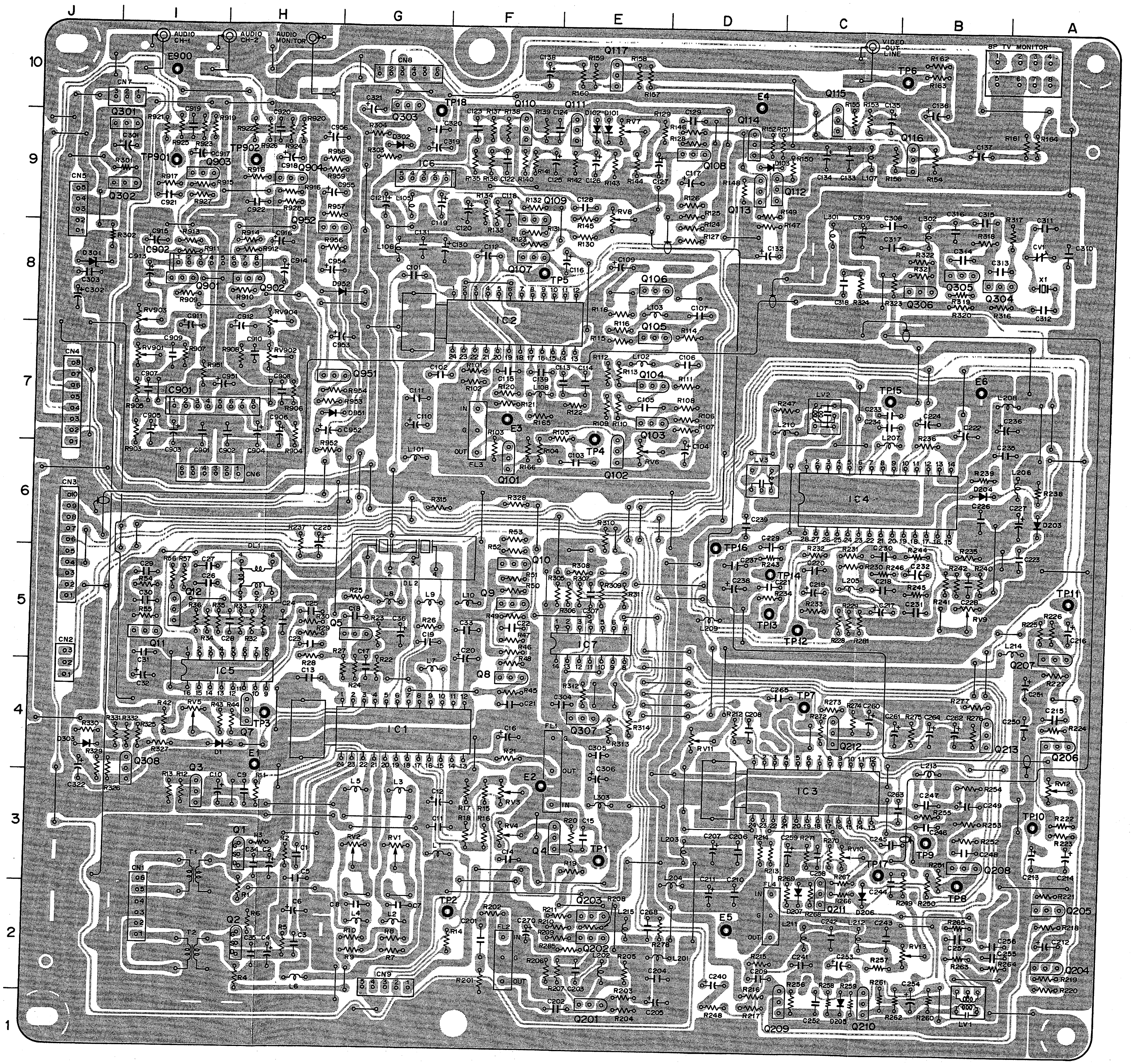
〈BOTTOM VIEW〉



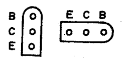
21	PT-9 Board
22	PTC-16 Board
23	TG-22 Board
24	PD-30 Board
25	PTC-16 Board

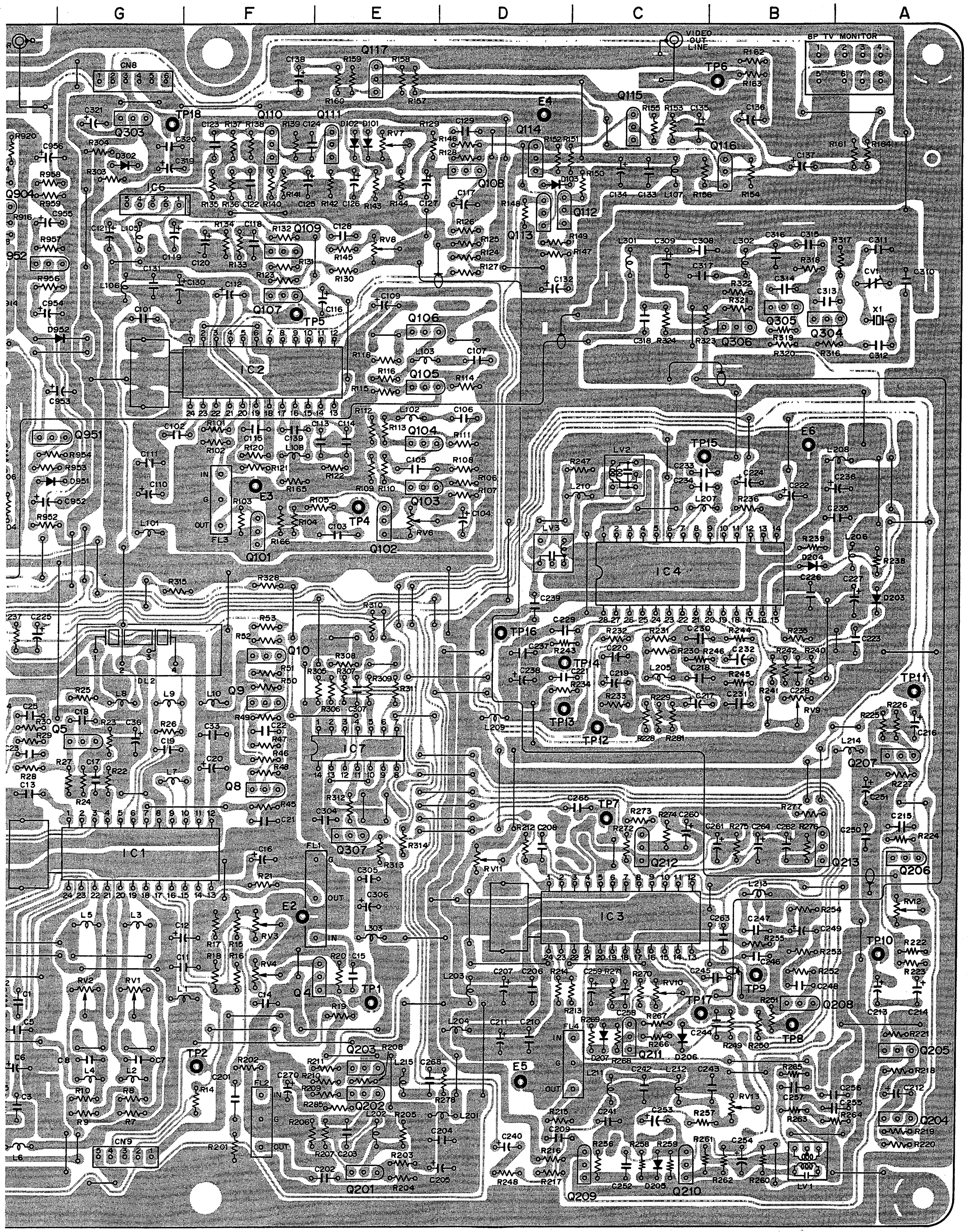
VA-35B; VIDEO/AUDIO PB

CN1	I - 2
CN2	J - 4
CN3	J - 5
CN4	J - 7
CN5	J - 8
CN6	I - 6
CN7	I - 10
CN8	G - 10
CN9	G - 2
CV1	A - 8
D1	H - 4
D101	E - 9
D102	E - 9
D103	D - 9
D203	A - 6
D204	B - 6
D205	C - 1
D206	C - 2
D207	C - 2
D301	J - 8
D302	G - 9
D303	J - 4
D951	G - 7
D952	G - 8
DL1	H - 5
DL2	G - 5
E1	H - 3
E2	F - 3
E3	F - 7
E4	D - 10
E5	D - 2
E6	B - 7
E900	I - 10
FL1	E - 3
FL2	F - 2
FL3	F - 7
FL4	C - 2
IC1	G - 4
IC2	F - 8
IC3	C - 3
IC4	C - 6
IC5	H - 4
IC6	G - 9
IC7	E - 5
IC901	I - 7
LV1	B - 2
LV2	C - 7
LV3	D - 6
Q1	H - 3
Q2	H - 2
Q3	I - 3
Q4	E - 3
Q5	G - 5
Q7	H - 4
Q8	F - 4
Q9	F - 5
Q10	F - 5
Q11	I - 5
Q12	I - 5
Q101	F - 6
Q102	E - 6
Q103	E - 7
Q104	E - 7
Q105	E - 7
Q106	E - 8
Q107	F - 8
Q108	D - 9
Q109	F - 9
Q110	F - 9
Q111	E - 9
Q112	D - 9
Q113	D - 9
Q114	D - 9
Q115	C - 10
Q116	B - 9
Q117	E - 10
Q201	E - 1
Q202	E - 2
Q203	E - 2
Q204	A - 2
Q205	A - 2
Q206	A - 4
Q207	A - 5
Q208	B - 3
Q209	C - 1
Q210	C - 1
Q211	C - 2
Q212	C - 4
Q213	B - 4
Q301	I - 9
Q302	I - 9
Q303	G - 10
Q304	B - 8
Q305	B - 8
Q306	B - 8
Q307	E - 4
Q308	I - 3
Q901	I - 8
Q902	H - 8
Q903	I - 9
Q904	H - 9
Q951	H - 7
Q952	H - 8
RV1	G - 3
RV2	G - 3
RV3	F - 3
RV4	F - 3
RV5	I - 4
RV6	E - 6
RV7	E - 9
RV8	E - 9
RV9	B - 5
RV10	C - 3
RV11	D - 4
RV12	A - 4
RV13	B - 2
RV901	I - 7
RV902	H - 7
RV903	I - 8
RV904	H - 8
T1	I - 3
T2	I - 2
TP1	E - 3
TP2	F - 2
TP3	H - 4
TP4	E - 7
TP5	F - 8
TP6	B - 10
TP7	C - 4
TP8	B - 3
TP9	B - 3
TP10	A - 3
TP11	A - 5
TP12	C - 5
TP13	D - 5
TP14	D - 5
TP15	C - 7
TP16	D - 6
TP17	B - 3
TP18	G - 10
TP901	I - 9
TP902	H - 9
X1	A - 8


J
I
H
G
F
E
D
C
B
A
10
9
8
7
6
5
4
3
2
1
AUDIO CH-1
AUDIO CH-2
AUDIO MONITOR
VIDEO OUT LINE
RF TV MONITOR
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC901
CN1
CN2
CN3
CN4
CN5
CN6
CN7
CN8
CN9
E900
TP901
TP902
TP18
TP6
TP15
TP16
TP14
TP13
TP12
TP11
TP10
TP9
TP8
TP17
TP7
TP1
TP2
TP3
TP4
TP5
E1
E2
E3
E4
E5
E6
FL1
FL2
FL3
DL1
DL2
LV1
LV2
LV3
X1
CV1

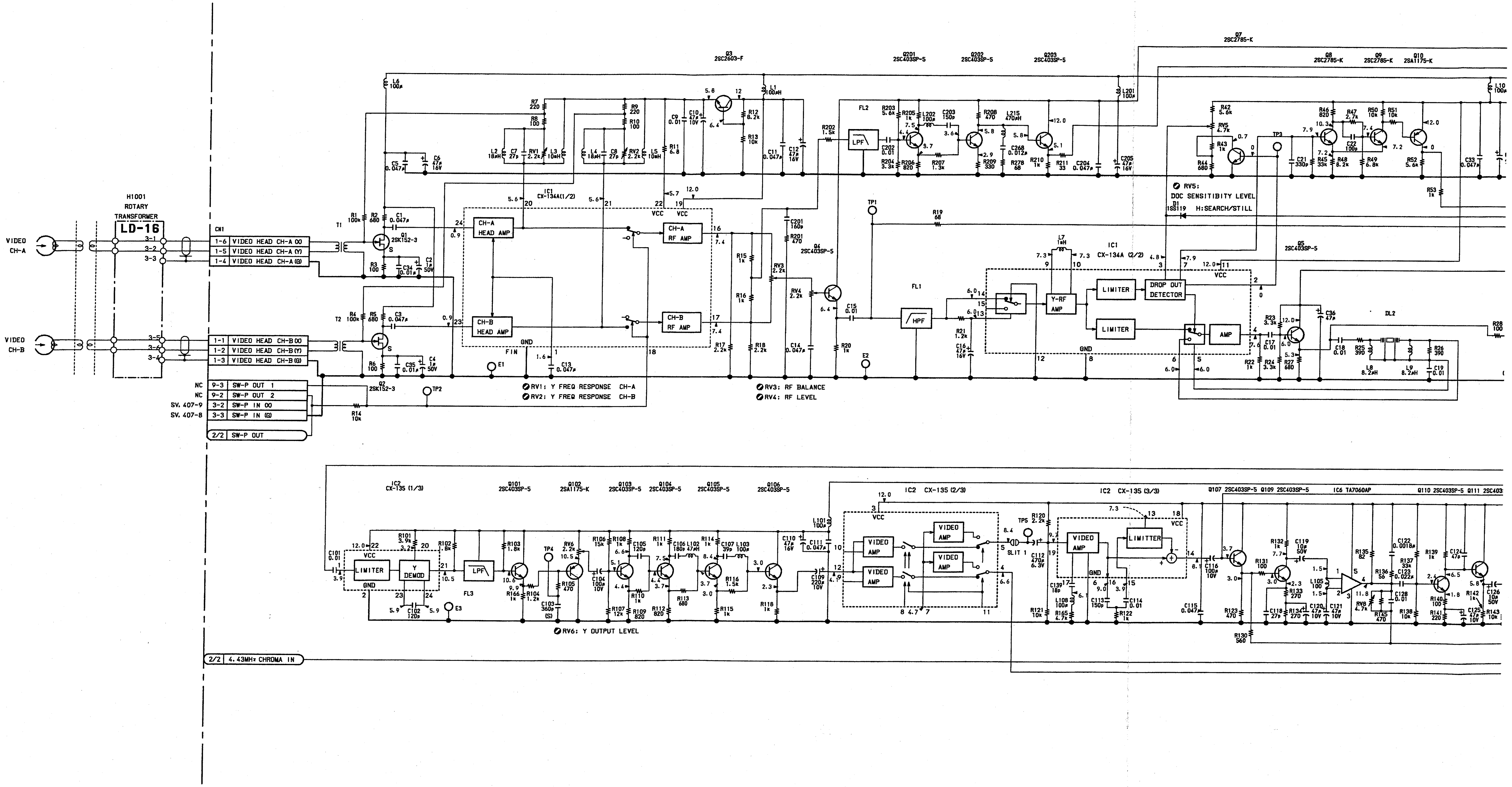
VA-35B -SOLDERING SIDE-
1-618-603-21
VP-5040

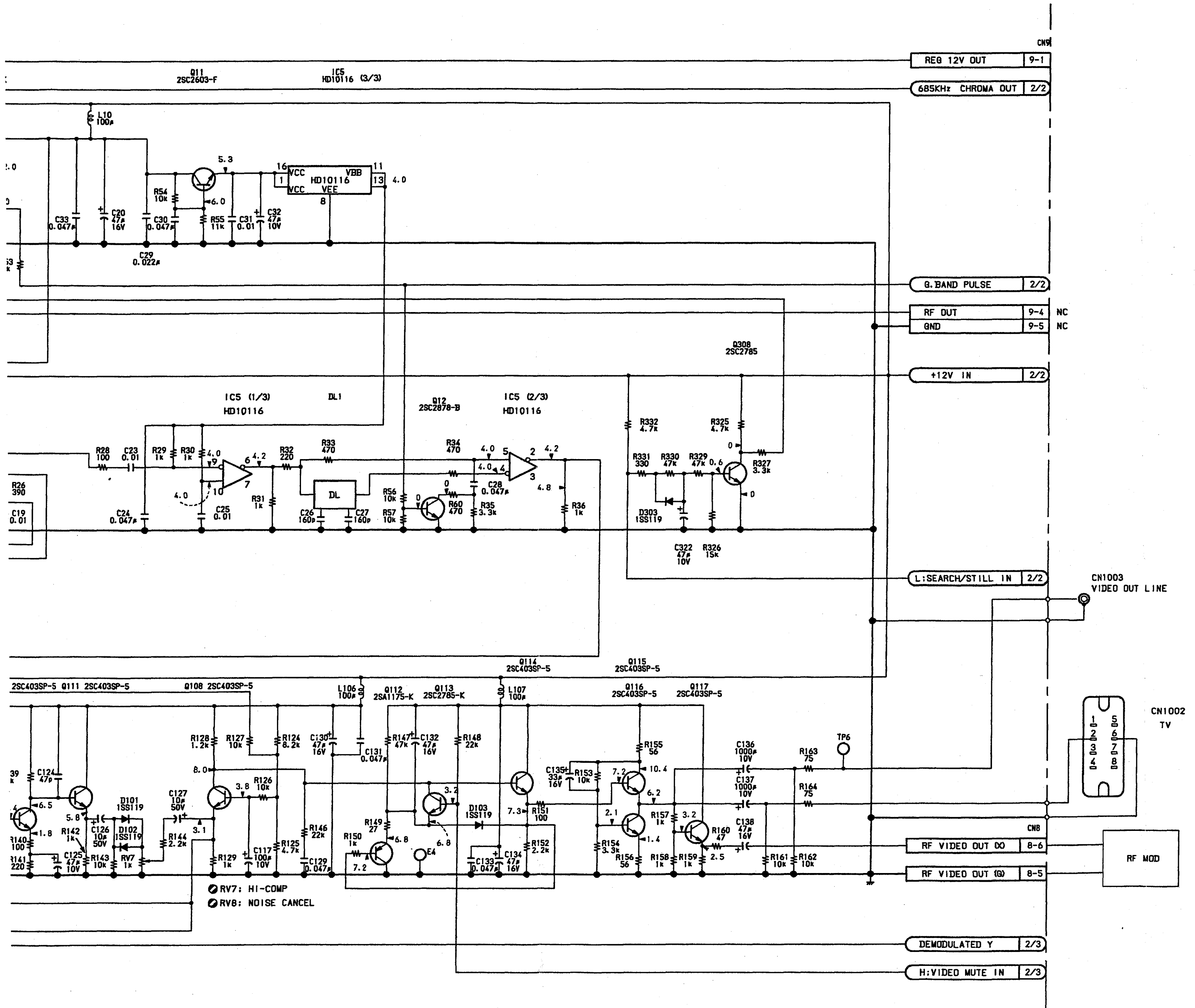



G
F
E
D
C
B
A
VIDEO OUT LINE
8P TV MONITOR
CN8
CN9
IC1
IC2
IC3
IC4
IC6
IC7
TP1
TP2
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
TP17
TP18
E2
E3
E4
E5
E6
FL1
FL2
FL3
FL4
DL2
X1
LV1
LV2
LV3

VA-35B —SOLDERING SIDE—
1-618-603-21
VP-5040

VA-35B (1/3); Y DEMODULATOR

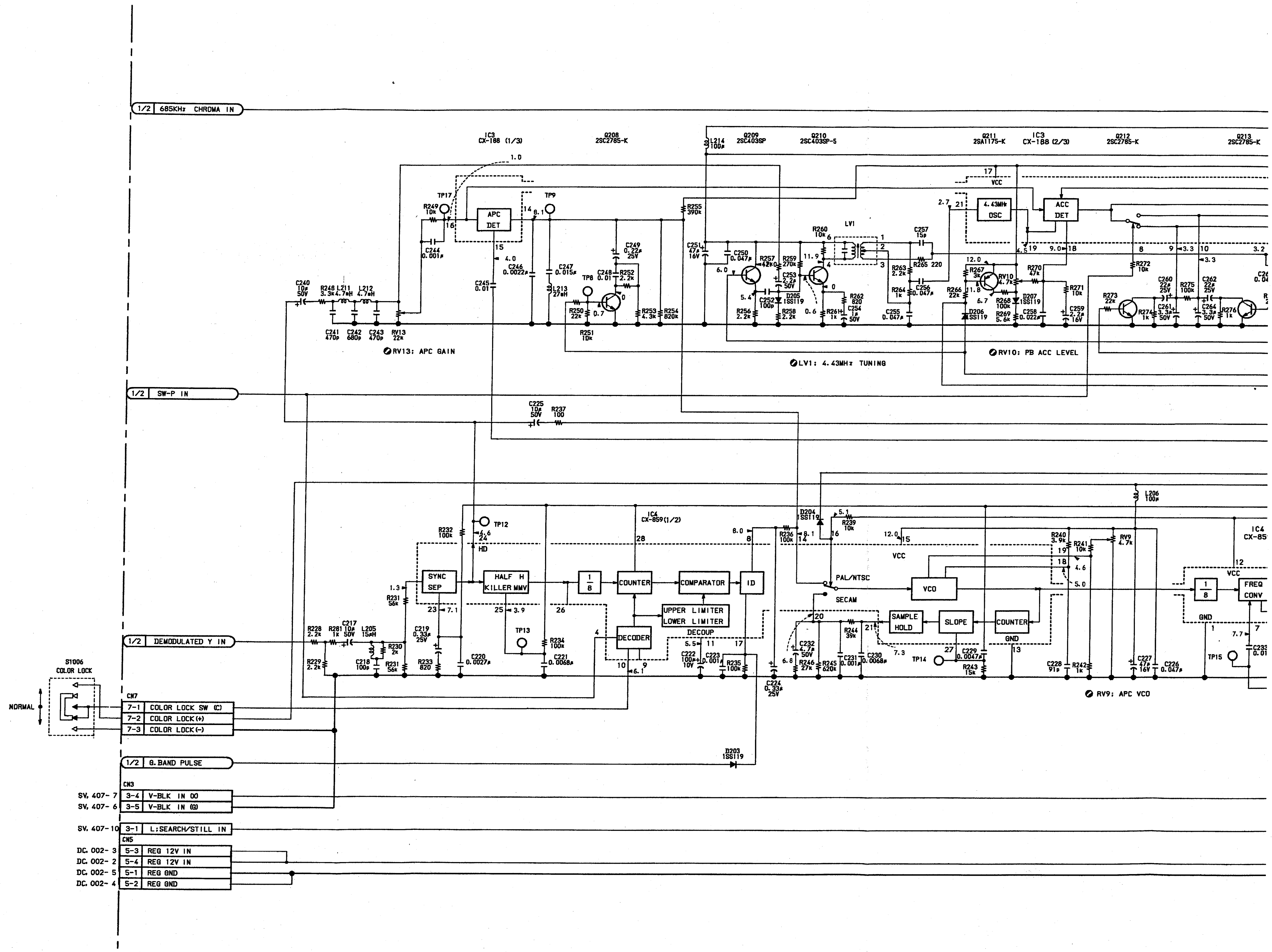

H1001
ROTARY
TRANSFORMER
LD-16
VIDEO
CH-A
VIDEO
CH-B
CN1
1-6 VIDEO HEAD CH-A (X)
1-5 VIDEO HEAD CH-A (Y)
1-4 VIDEO HEAD CH-A (G)
1-1 VIDEO HEAD CH-B (X)
1-2 VIDEO HEAD CH-B (Y)
1-3 VIDEO HEAD CH-B (G)
NC 9-3 SW-P OUT 1
NC 9-2 SW-P OUT 2
SV. 407-9 3-2 SW-P IN (X)
SV. 407-8 3-3 SW-P IN (G)
2/2 SW-P OUT
2/2 4.43MHz CHROMA IN
Q1 2SK152-3
Q2 2SK152-3
Q3 2SC2603-F
Q4 2SC403SP-5
Q5 2SC403SP-5
Q7 2SC2785-K
Q8 2SC2785-K
Q9 2SC2785-K
Q10 2SA1175-K
Q201 2SC403SP-5
Q202 2SC403SP-5
Q203 2SC403SP-5
IC1 CX-134A (1/2)
IC1 CX-134A (2/2)
CH-A HEAD AMP
CH-B HEAD AMP
CH-A RF AMP
CH-B RF AMP
VCC
GND
FIN
Y-RF AMP
LIMITER
DROP OUT DETECTOR
AMP
FL1
FL2
LPF
HPF
DL2
TP1
TP2
TP3
E1
E2
RV1: Y FREQ RESPONSE CH-A
RV2: Y FREQ RESPONSE CH-B
RV3: RF BALANCE
RV4: RF LEVEL
RV5: DOC SENSITIBITY LEVEL
D1 1SS119 H:SEARCH/STILL
IC2 CX-135 (1/3)
IC2 CX-135 (2/3)
IC2 CX-135 (3/3)
Q101 2SC403SP-5
Q102 2SA1175-K
Q103 2SC403SP-5
Q104 2SC403SP-5
Q105 2SC403SP-5
Q106 2SC403SP-5
Q107 2SC403SP-5
Q109 2SC403SP-5
IC6 TA7060AP
Q110 2SC403SP-5
Q111 2SC403
LIMITER
Y DEMOD
FL3
VIDEO AMP
LIMITTER
SLIT 1
TP4
TP5
E3
RV6: Y OUTPUT LEVEL

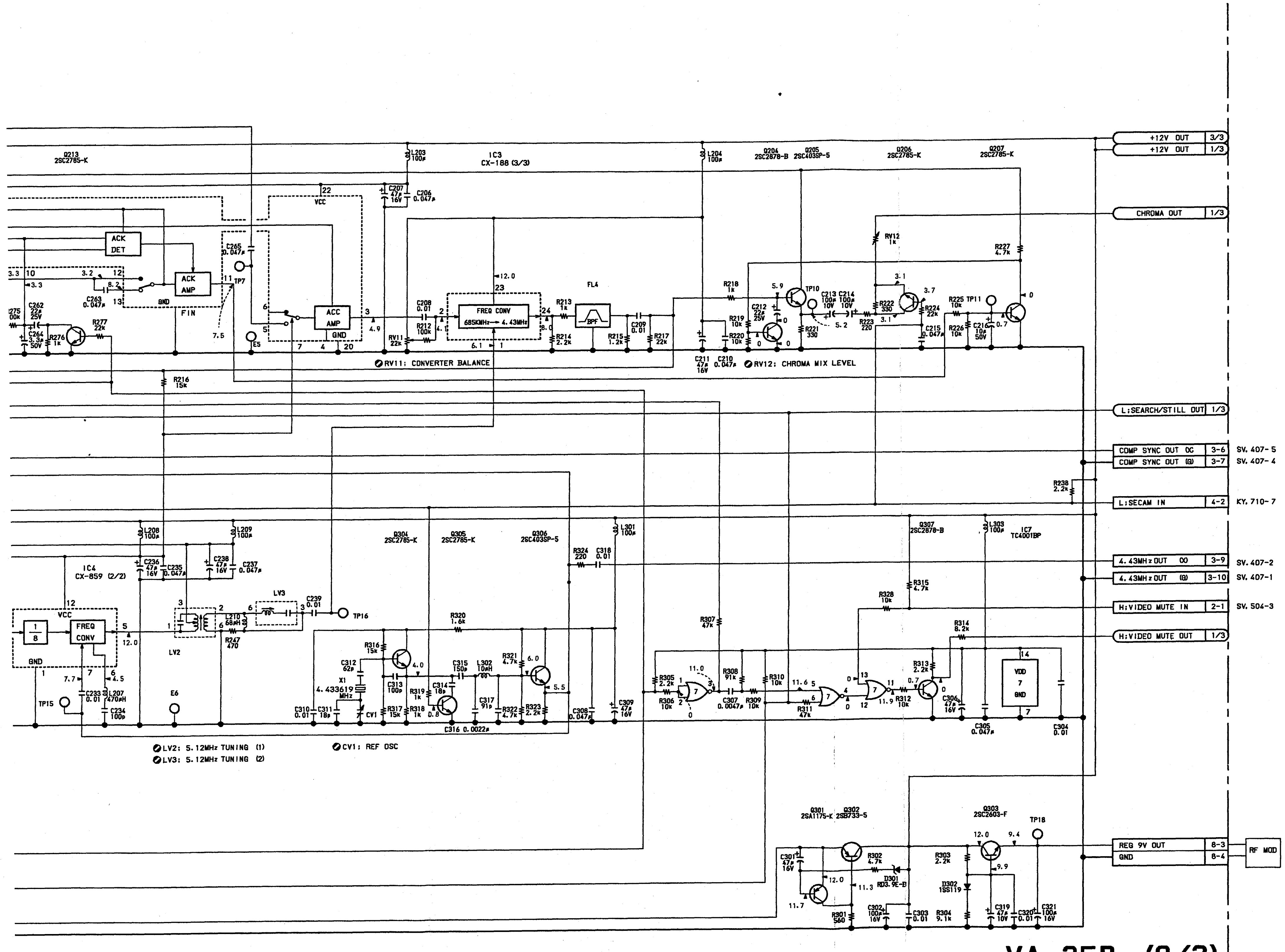

CN9
REG 12V OUT 9-1
685KHz CHROMA OUT 2/2
Q11 2SC2603-F
IC5 HD10116 (3/3)
L10 100μ
HD10116
VCC VBB VEE
R54 10k
R55 11k
C33 0.047μ
C20 47μ 16V
C30 0.047μ
C31 0.01
C32 47μ 10V
C29 0.022μ
G.BAND PULSE 2/2
RF OUT 9-4 NC
GND 9-5 NC
Q308 2SC2785
+12V IN 2/2
IC5 (1/3) HD10116
DL1
Q12 2SC2878-B
IC5 (2/3) HD10116
R332 4.7k
R325 4.7k
R331 330
R330 47k
R329 47k
R327 3.3k
D303 1SS119
C322 47μ 10V
R326 15k
R28 100
C23 0.01
R29 1k
R30 1k
R32 220
R33 470
R34 470
R26 390
C19 0.01
C24 0.047μ
C25 0.01
R31 1k
C26 160p
C27 160p
DL
R56 10k
R57 10k
R60 470
C28 0.047μ
R35 3.3k
R36 1k
L:SEARCH/STILL IN 2/2
CN1003 VIDEO OUT LINE
CN1002 TV
Q114 2SC403SP-5
Q115 2SC403SP-5
2SC403SP-5 Q111 2SC403SP-5
Q108 2SC403SP-5
L106 100μ
Q112 2SA1175-K
Q113 2SC2785-K
L107 100μ
Q116 2SC403SP-5
Q117 2SC403SP-5
R128 1.2k
R127 10k
R124 8.2k
C130 47μ 16V
C131 0.047μ
R147 47k
C132 47μ 16V
R148 22k
R155 56
C136 1000μ 10V
R163 75
TP6
C137 1000μ 10V
R164 75
C135 33μ 16V
R153 10k
C124 47μ
D101 1SS119
C127 10μ 50V
R126 10k
R146 22k
R149 27
D103 1SS119
R151 100
R157 1k
R160 47
C138 47μ 16V
R142 1k
C126 10μ 50V
D102 1SS119
R144 2.2k
R150 1k
E4
R152 2.2k
R154 3.3k
R140 100
C125 47μ 10V
R143 10k
RV7 1k
R129 1k
C117 100μ 10V
R125 4.7k
C129 0.047μ
C133 0.047μ
C134 47μ 16V
R156 56
R158 1k
R159 1k
R161 10k
R162 10k
R141 220
CN8
RF VIDEO OUT (X) 8-6
RF VIDEO OUT (G) 8-5
RF MOD
RV7: HI-COMP
RV8: NOISE CANCEL
DEMODULATED Y 2/3
H:VIDEO MUTE IN 2/3

VA-35B (1/3)

1-618-603-21
VP-5040

VA-35B (2/3); CHROMA DEMODULATOR


1/2 685KHz CHROMA IN
IC3 CX-188 (1/3)
Q208 2SC2785-K
Q209 2SC403SP
Q210 2SC403SP-5
Q211 2SA1175-K
IC3 CX-188 (2/3)
Q212 2SC2785-K
Q213 2SC2785-K
APC DET
4.43MHz OSC
ACC DET
VCC
TP17
TP9
TP8
LV1
RV13: APC GAIN
LV1: 4.43MHz TUNING
RV10: PB ACC LEVEL
1/2 SW-P IN
IC4 CX-859(1/2)
TP12
HD
SYNC SEP
HALF H KILLER MMV
1/8
COUNTER
COMPARATOR
ID
UPPER LIMITER
LOWER LIMITER
DECOUP
DECODER
TP13
PAL/NTSC
SECAM
VCO
SAMPLE HOLD
SLOPE
COUNTER
GND
TP14
IC4 CX-859
FREQ CONV
TP15
RV9: APC VCO
1/2 DEMODULATED Y IN
S1006 COLOR LOCK
NORMAL
CN7
7-1 COLOR LOCK SW (C)
7-2 COLOR LOCK (+)
7-3 COLOR LOCK (-)
1/2 G.BAND PULSE
D203 1SS119
CN3
SV. 407- 7 3-4 V-BLK IN (R)
SV. 407- 6 3-5 V-BLK IN (G)
SV. 407-10 3-1 L:SEARCH/STILL IN
CN5
DC. 002- 3 5-3 REG 12V IN
DC. 002- 2 5-4 REG 12V IN
DC. 002- 5 5-1 REG GND
DC. 002- 4 5-2 REG GND


Q213 2SC2785-K
IC3 CX-188 (3/3)
L203 100μ
C207 47μ 16V
C206 0.047μ
VCC
ACK DET
ACK AMP
ACC AMP
GND
FIN
C265 0.047μ
TP7
E5
C263 0.047μ
C262 22μ 25V
C264 3.3μ 50V
R276 1k
R277 22k
FREQ CONV
685KMHz→4.43MHz
C208 0.01
R212 100k
RV11 22k
R213 1k
FL4
BPF
R214 2.2k
R215 1.2k
C209 0.01
R217 22k
RV11: CONVERTER BALANCE
L204 100μ
Q204 2SC2878-B
Q205 2SC403SP-5
Q206 2SC2785-K
Q207 2SC2785-K
R218 1k
R219 10k
R220 10k
C212 22μ 25V
TP10
C213 100μ 10V
C214 100μ 10V
R221 330
R222 330
R223 220
R224 22k
R225 10k
TP11
R226 10k
C215 0.047μ
C216 10μ 50V
RV12 1k
R227 4.7k
C211 47μ 16V
C210 0.047μ
RV12: CHROMA MIX LEVEL
R216 15k
+12V OUT 3/3
+12V OUT 1/3
CHROMA OUT 1/3
L:SEARCH/STILL OUT 1/3
COMP SYNC OUT (X) 3-6 SV. 407-5
COMP SYNC OUT (B) 3-7 SV. 407-4
R238 2.2k
L:SECAM IN 4-2 KY. 710-7
4.43MHz OUT (X) 3-9 SV. 407-2
4.43MHz OUT (B) 3-10 SV. 407-1
H:VIDEO MUTE IN 2-1 SV. 504-3
H:VIDEO MUTE OUT 1/3
REG 9V OUT 8-3
GND 8-4
RF MOD
L208 100μ
L209 100μ
IC4 CX-859 (2/2)
C236 47μ 16V
C235 0.047μ
C238 47μ 16V
C237 0.047μ
1/8
FREQ CONV
LV2
LV3
L210 68μH
R247 470
C239 0.01
TP16
E6
TP15
C233 0.01
L207 470μH
C234 100p
LV2: 5.12MHz TUNING (1)
LV3: 5.12MHz TUNING (2)
Q304 2SC2785-K
Q305 2SC2785-K
Q306 2SC403SP-5
L301 100μ
R324 220
C318 0.01
R320 1.6k
R316 15k
C312 62p
X1 4.433619 MHz
CV1
C313 100p
C315 150p
L302 10μH
R321 4.7k
R319 1k
C314 18p
C317 91p
R322 4.7k
R323 2.2k
C310 0.01
C311 18p
R317 15k
R318 1k
C316 0.0022μ
C308 0.047μ
C309 47μ 16V
CV1: REF OSC
R307 47k
R305 2.2k
R306 10k
R308 91k
C307 0.0047μ
R309 10k
R310 10k
R311 47k
R313 2.2k
R312 10k
C306 47μ 16V
Q307 2SC2878-B
L303 100μ
IC7 TC4001BP
R315 4.7k
R328 10k
R314 8.2k
VDD 14
GND 7
C305 0.047μ
C304 0.01
Q301 2SA1175-K
Q302 2SB733-5
Q303 2SC2603-F
TP18
C301 47μ 16V
R302 4.7k
D301 RD3.9E-D
R303 2.2k
D302 1SS119
R301 560
C302 100μ 16V
C303 0.01
R304 9.1k
C319 47μ 10V
C320 0.01
C321 100μ 16V

VA-35B (2/3)

1-618-603-21
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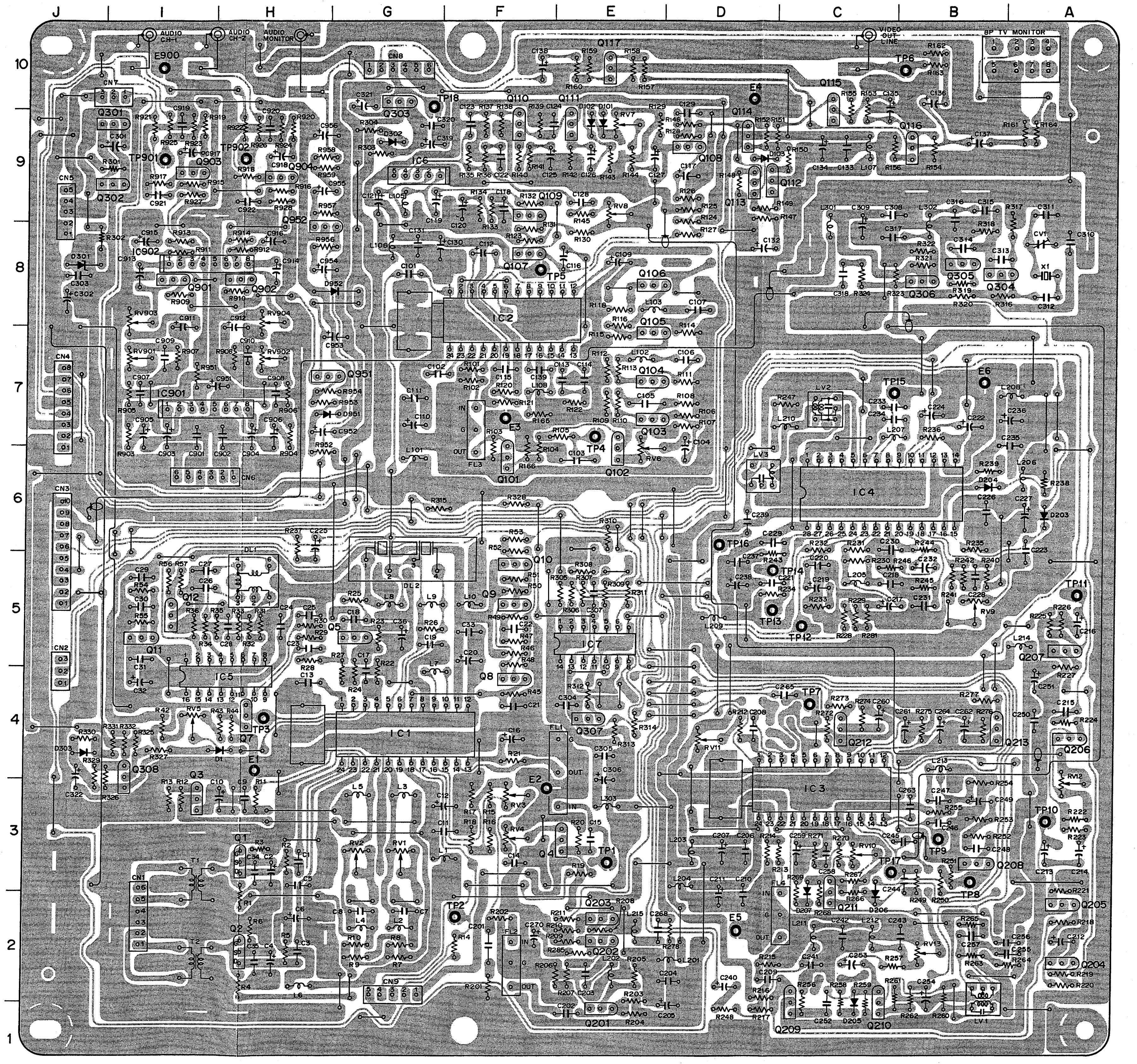
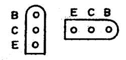
VA-35B; VIDEO/AUDIO PB

CN1	I - 2	Q1	H - 3	RV1	G - 3
CN2	J - 4	Q2	H - 2	RV2	G - 3
CN3	J - 5	Q3	I - 3	RV3	F - 3
CN4	J - 7	Q4	E - 3	RV4	F - 3
CN5	J - 8	Q5	G - 5	RV5	I - 4
CN6	I - 6	Q7	H - 4	RV6	E - 6
CN7	I - 10	Q8	F - 4	RV7	E - 9
CN8	G - 10	Q9	F - 5	RV8	E - 9
CN9	G - 2	Q10	F - 5	RV9	B - 5
		Q11	I - 5	RV10	C - 3
CV1	A - 8	Q12	I - 5	RV11	D - 4
		Q101	F - 6	RV12	A - 4
D1	H - 4	Q102	E - 6	RV13	B - 2
D101	E - 9	Q103	E - 7	RV901	I - 7
D102	E - 9	Q104	E - 7	RV902	H - 7
D103	D - 9	Q105	E - 7	RV903	I - 8
D203	A - 6	Q106	E - 8	RV904	H - 8
D204	B - 6	Q107	F - 8		
D205	C - 1	Q108	D - 9	T1	I - 3
D206	C - 2	Q109	F - 9	T2	I - 2
D207	C - 2	Q110	F - 9		
D301	J - 8	Q111	E - 9	TP1	E - 3
D302	G - 9	Q112	D - 9	TP2	F - 2
D303	J - 4	Q113	D - 9	TP3	H - 4
D951	G - 7	Q114	D - 9	TP4	E - 7
D952	G - 8	Q115	C - 10	TP5	F - 8
		Q116	B - 9	TP6	B - 10
DL1	H - 5	Q117	E - 10	TP7	C - 4
DL2	G - 5	Q201	E - 1	TP8	B - 3
		Q202	E - 2	TP9	B - 3
E1	H - 3	Q203	E - 2	TP10	A - 3
E2	F - 3	Q204	A - 2	TP11	A - 5
E3	F - 7	Q205	A - 2	TP12	C - 5
E4	D - 10	Q206	A - 4	TP13	D - 5
E5	D - 2	Q207	A - 5	TP14	D - 5
E6	B - 7	Q208	B - 3	TP15	C - 7
E900	I - 10	Q209	C - 1	TP16	D - 6
		Q210	C - 1	TP17	B - 3
FL1	E - 3	Q211	C - 2	TP18	G - 10
FL2	F - 2	Q212	C - 4	TP901	I - 9
FL3	F - 7	Q213	B - 4	TP902	H - 9
FL4	C - 2	Q301	I - 9		
		Q302	I - 9	X1	A - 8
IC1	G - 4	Q303	G - 10		
IC2	F - 8	Q304	B - 8		
IC3	C - 3	Q305	B - 8		
IC4	C - 6	Q306	B - 8		
IC5	H - 4	Q307	E - 4		
IC6	G - 9	Q308	I - 3		
IC7	E - 5	Q901	I - 8		
IC901	I - 7	Q902	H - 8		
		Q903	I - 9		
LV1	B - 2	Q904	H - 9		
LV2	C - 7	Q951	H - 7		
LV3	D - 6	Q952	H - 8		


J
I
H
G
F
E
D
C
B
A
10
9
8
7
6
5
4
3
2
1
AUDIO CH-1
AUDIO CH-2
AUDIO MONITOR
VIDEO OUT LINE
8P TV MONITOR
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC901



VA-35B -SOLDERING SIDE-
1-618-603-21
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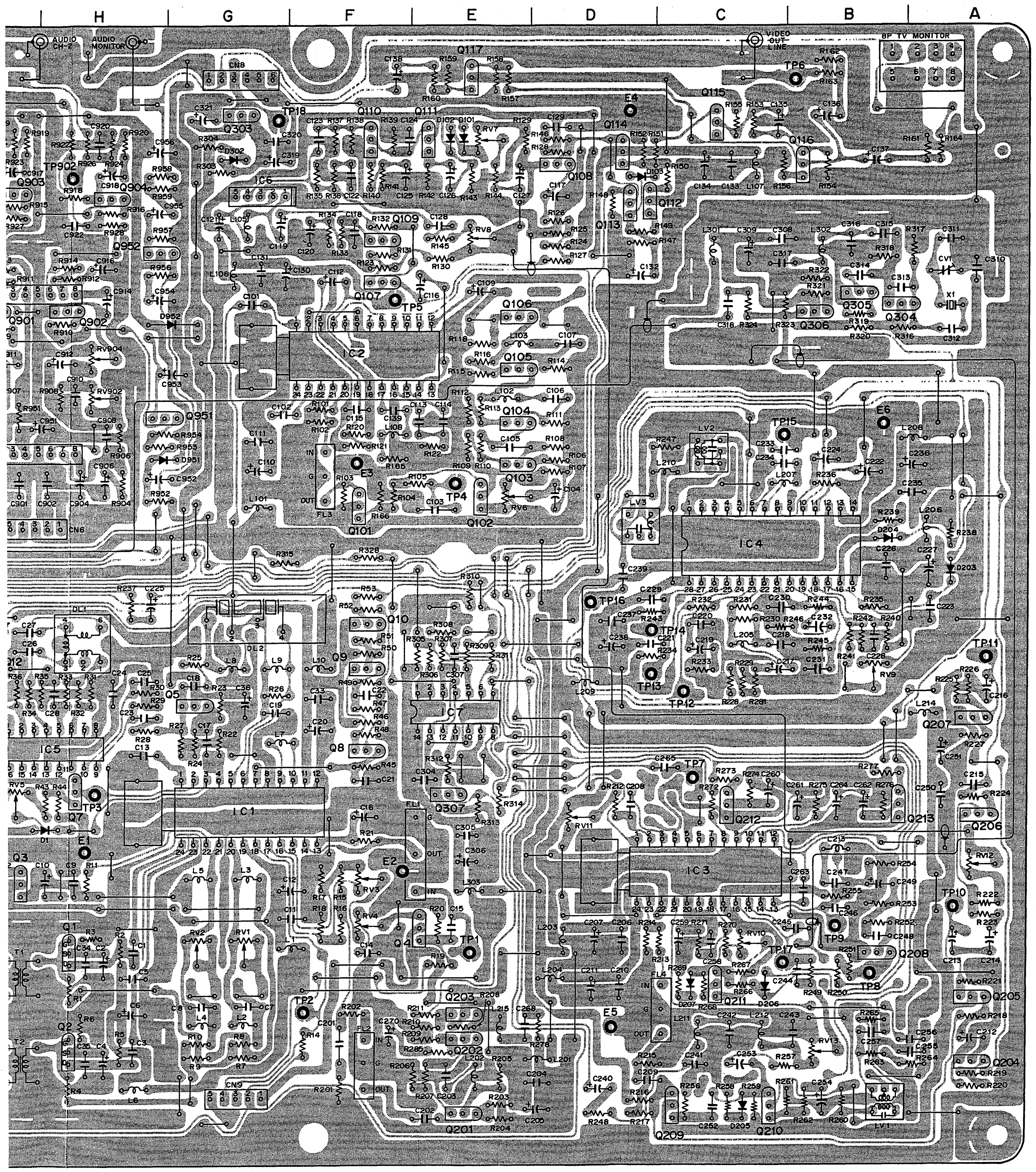
H
G
F
E
D
C
B
A
AUDIO CH-2
AUDIO MONITOR
VIDEO OUT LINE
8P TV MONITOR
CN8
CN6
CN9
IC1
IC2
IC3
IC4
IC5
IC6
IC7
DL1
DL2
FL1
FL3
FL4
LV1
LV2
LV3
X1
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
TP17
TP18
TP902
E1
E2
E3
E4
E5
E6

VA-35B -SOLDERING SIDE-
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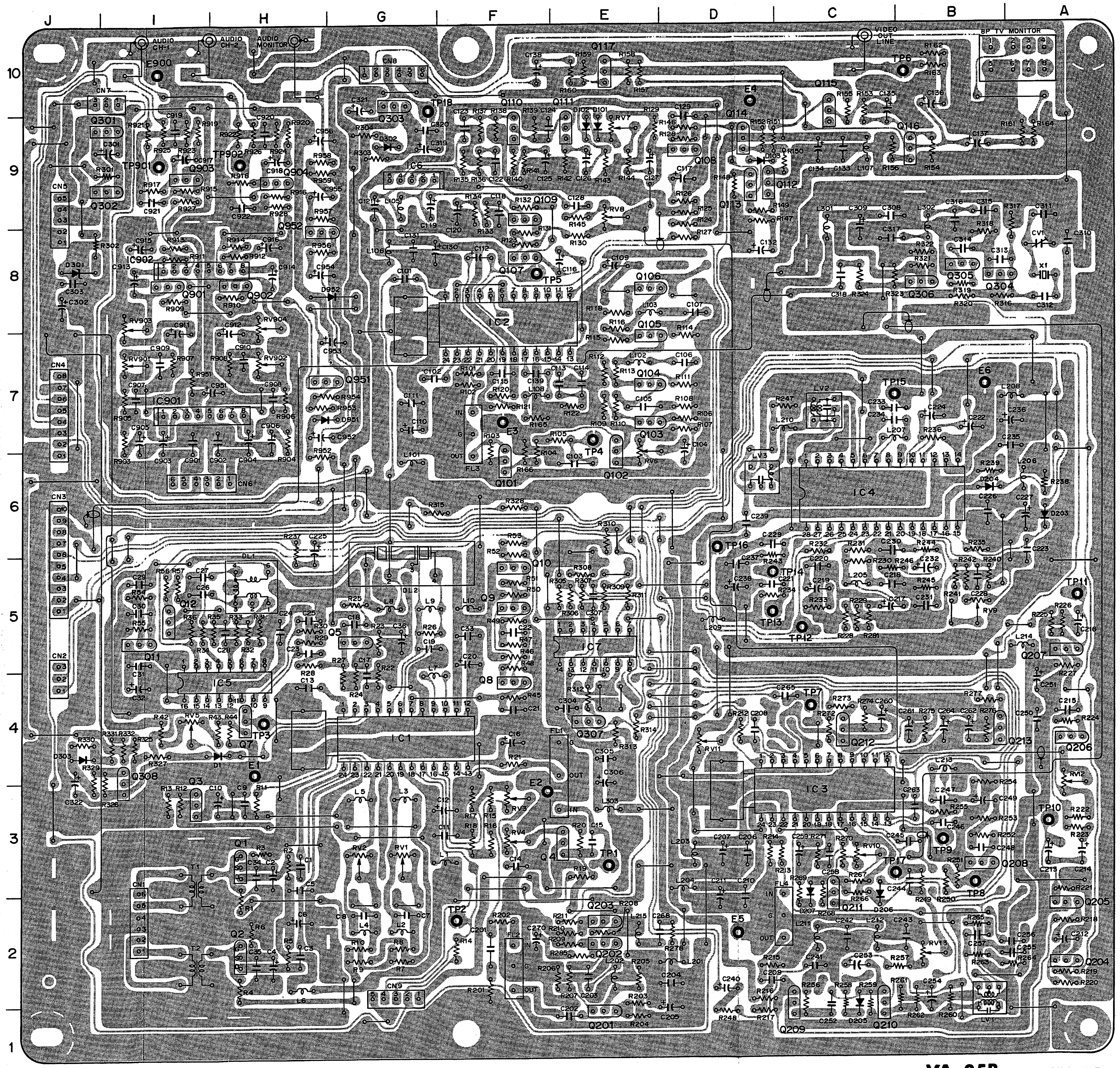
VP-5040

VA-35B; VIDEO/AUDIO PB

AH-11; AUDIO/CTL PB HEAD

CN1	I - 2
CN2	J - 4
CN3	J - 5
CN4	J - 7
CN5	J - 8
CN6	I - 6
CN7	I - 10
CN8	G - 10
CN9	G - 2
CV1	A - 8
D1	H - 4
D101	E - 9
D102	E - 9
D103	D - 9
D203	A - 6
D204	B - 6
D205	C - 1
D206	C - 2
D207	C - 2
D301	J - 8
D302	G - 9
D303	J - 4
D951	G - 7
D952	G - 8
DL1	H - 5
DL2	G - 5
E1	H - 3
E2	F - 3
E3	F - 7
E4	D - 10
E5	D - 2
E6	B - 7
E900	I - 10
FL1	E - 3
FL2	F - 2
FL3	F - 7
FL4	C - 2
IC1	G - 4
IC2	F - 8
IC3	C - 3
IC4	C - 6
IC5	H - 4
IC6	G - 9
IC7	E - 5
IC901	I - 7
LV1	B - 2
LV2	C - 7
LV3	D - 6
Q1	H - 3
Q2	H - 2
Q3	I - 3
Q4	E - 3
Q5	G - 5
Q7	H - 4
Q8	F - 4
Q9	F - 5
Q10	F - 5
Q11	I - 5
Q12	I - 5
Q101	F - 6
Q102	E - 6
Q103	E - 7
Q104	E - 7
Q105	E - 7
Q106	E - 8
Q107	F - 8
Q108	D - 9
Q109	F - 9
Q110	F - 9
Q111	E - 9
Q112	D - 9
Q113	D - 9
Q114	D - 9
Q115	C - 10
Q116	B - 9
Q117	E - 10
Q201	E - 1
Q202	E - 2
Q203	E - 2
Q204	A - 2
Q205	A - 2
Q206	A - 4
Q207	A - 5
Q208	B - 3
Q209	C - 1
Q210	C - 1
Q211	C - 2
Q212	C - 4
Q213	B - 4
Q301	I - 9
Q302	I - 9
Q303	G - 10
Q304	B - 8
Q305	B - 8
Q306	B - 8
Q307	E - 4
Q308	I - 3
Q901	I - 8
Q902	H - 8
Q903	I - 9
Q904	H - 9
Q951	H - 7
Q952	H - 8
RV1	G - 3
RV2	G - 3
RV3	F - 3
RV4	F - 3
RV5	I - 4
RV6	E - 6
RV7	E - 9
RV8	E - 9
RV9	B - 5
RV10	C - 3
RV11	D - 4
RV12	A - 4
RV13	B - 2
RV901	I - 7
RV902	H - 7
RV903	I - 8
RV904	H - 8
T1	I - 3
T2	I - 2
TP1	E - 3
TP2	F - 2
TP3	H - 4
TP4	E - 7
TP5	F - 8
TP6	B - 10
TP7	C - 4
TP8	B - 3
TP9	B - 3
TP10	A - 3
TP11	A - 5
TP12	C - 5
TP13	D - 5
TP14	D - 5
TP15	C - 7
TP16	D - 6
TP17	B - 3
TP18	G - 10
TP901	I - 9
TP902	H - 9
X1	A - 8


J
I
H
G
F
E
D
C
B
A
10
9
8
7
6
5
4
3
2
1
AUDIO CH-1
AUDIO CH-2
AUDIO MONITOR
VIDEO OUT LINE
8P TV MONITOR
E900
TP901
TP902
TP18
TP6
E4
IC6
IC2
IC902
IC901
IC4
IC5
IC1
IC7
IC3
DL1
DL2
CN1
CN2
CN3
CN4
CN5
CN6
CN7
CN8
CN9
LV1
LV2
LV3
X1
CV1
T1
T2
TP1
TP2
TP3
TP4
TP5
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
TP17
E1
E2
E3
E5
E6
FL1
FL2
FL3
FL4

VA-35B -SOLDERING SIDE-
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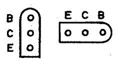
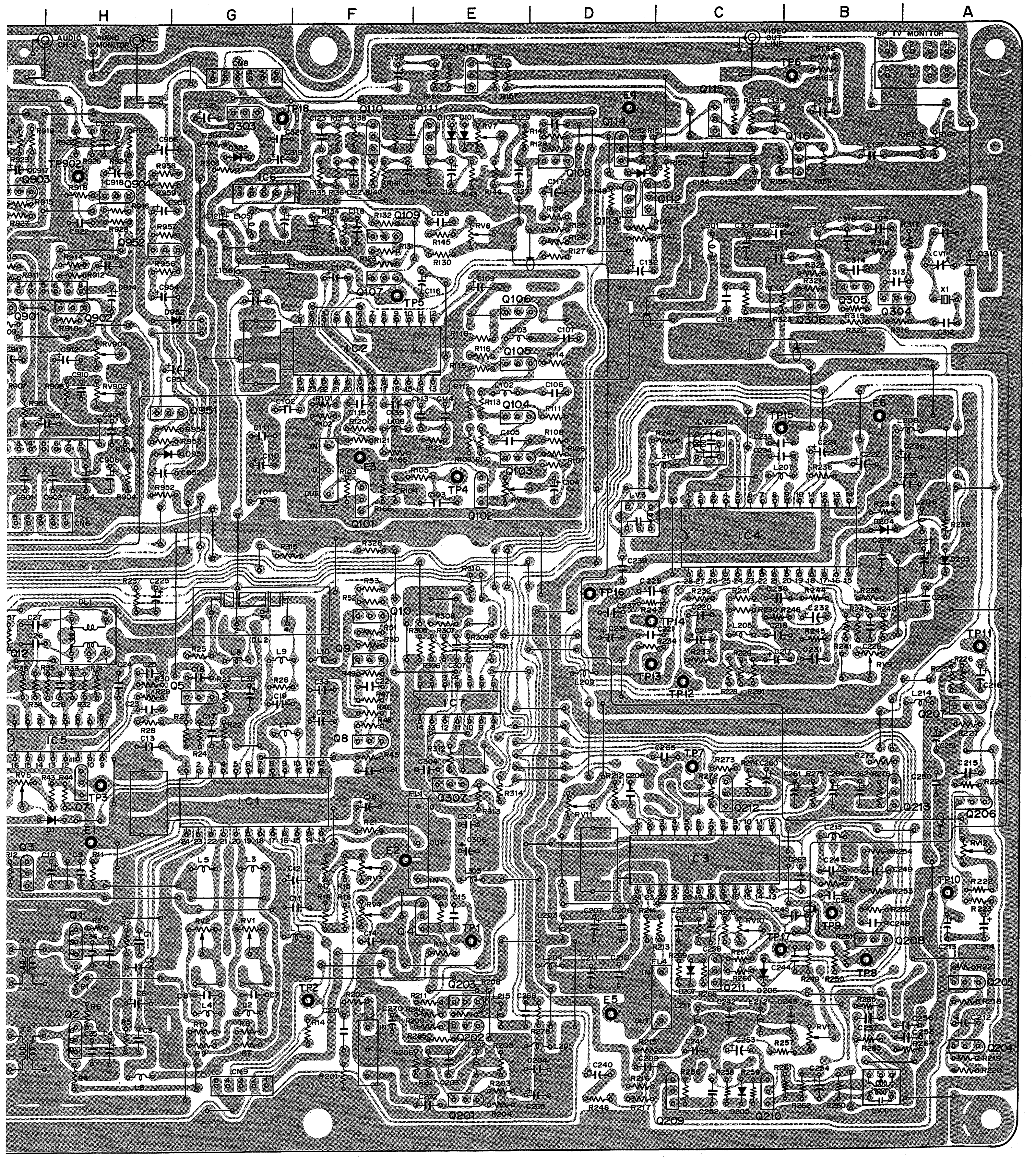
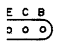
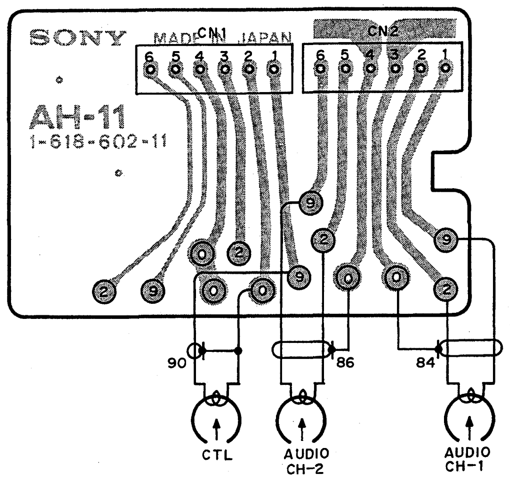



H
G
F
E
D
C
B
A
AUDIO CH-2
AUDIO MONITOR
VIDEO OUT LINE
8P TV MONITOR
IC1
IC2
IC3
IC4
IC5
IC6
IC7
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
TP17
TP18
TP902
E1
E2
E3
E4
E5
E6
CN6
CN8
CN9

VA-35B -SOLDERING SIDE-
1-618-603-21
VP-5040

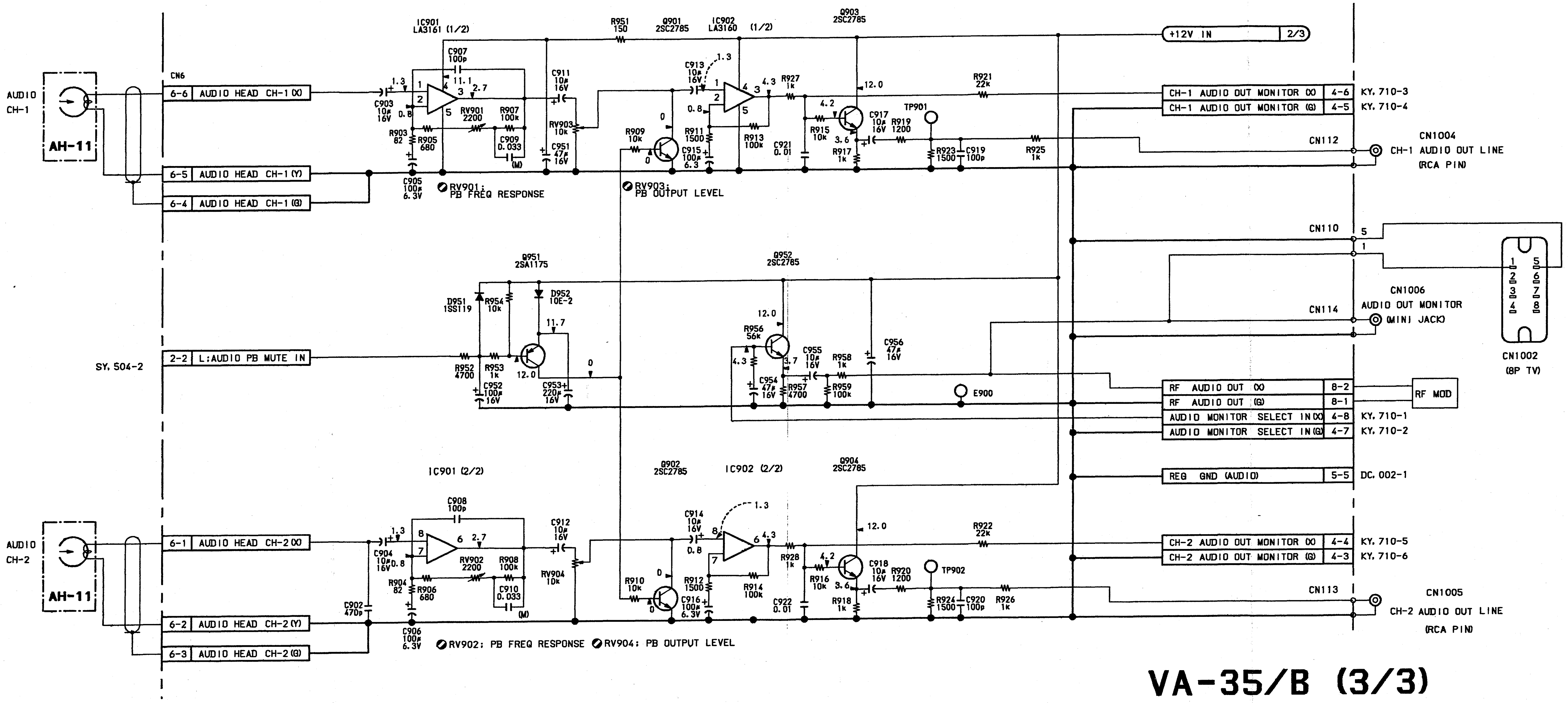



SONY
MADE IN JAPAN
CN1
CN2
AH-11
1-618-602-11
90
86
84
CTL
AUDIO CH-2
AUDIO CH-1

AH-11 -SOLDERING SIDE-
1-618-602-11
VP-5020
VP-5040

VA-35B (3/3); AUDIO PB AMPLIFIER

AH-11; AUDIO/CTL PB HEAD


AUDIO CH-1
AH-11
AUDIO CH-2
AH-11
CN6
6-6 AUDIO HEAD CH-1 (X)
6-5 AUDIO HEAD CH-1 (Y)
6-4 AUDIO HEAD CH-1 (G)
2-2 L:AUDIO PB MUTE IN
SY. 504-2
6-1 AUDIO HEAD CH-2 (X)
6-2 AUDIO HEAD CH-2 (Y)
6-3 AUDIO HEAD CH-2 (G)
IC901 LA3161 (1/2)
IC901 (2/2)
IC902 LA3160 (1/2)
IC902 (2/2)
Q901 2SC2785
Q902 2SC2785
Q903 2SC2785
Q904 2SC2785
Q951 2SA1175
Q952 2SC2785
D951 1SS119
D952 10E-2
RV901: PB FREQ RESPONSE
RV903: PB OUTPUT LEVEL
RV902: PB FREQ RESPONSE
RV904: PB OUTPUT LEVEL
TP901
TP902
E900
+12V IN 2/3
CH-1 AUDIO OUT MONITOR (X) 4-6 KY. 710-3
CH-1 AUDIO OUT MONITOR (G) 4-5 KY. 710-4
CN112
CN1004 CH-1 AUDIO OUT LINE (RCA PIN)
CN110
CN114
CN1006 AUDIO OUT MONITOR (MINI JACK)
CN1002 (8P TV)
RF AUDIO OUT (X) 8-2
RF AUDIO OUT (G) 8-1
RF MOD
AUDIO MONITOR SELECT IN (X) 4-8 KY. 710-1
AUDIO MONITOR SELECT IN (G) 4-7 KY. 710-2
REG GND (AUDIO) 5-5 DC. 002-1
CH-2 AUDIO OUT MONITOR (X) 4-4 KY. 710-5
CH-2 AUDIO OUT MONITOR (G) 4-3 KY. 710-6
CN113
CN1005 CH-2 AUDIO OUT LINE (RCA PIN)

VA-35/B (3/3)

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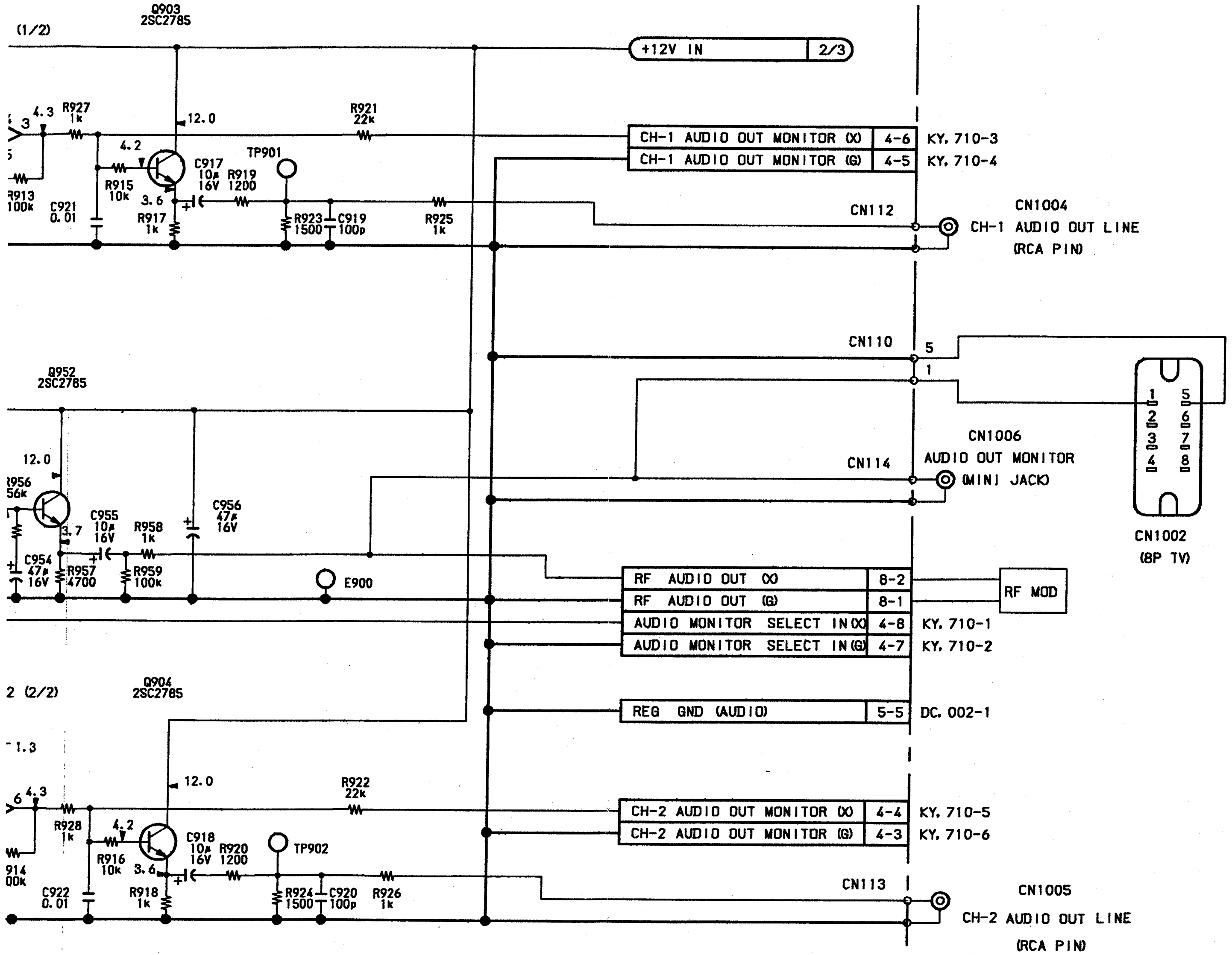
VP-5020
VP-5040


(1/2)
Q903
2SC2785
+12V IN
2/3
4.3
R927
1k
12.0
R921
22k
CH-1 AUDIO OUT MONITOR (X)
4-6
KY. 710-3
CH-1 AUDIO OUT MONITOR (G)
4-5
KY. 710-4
4.2
C917
10μ
16V
R919
1200
TP901
R913
100k
R915
10k
3.6
C921
0.01
R917
1k
R923
1500
C919
100p
R925
1k
CN112
CN1004
CH-1 AUDIO OUT LINE
(RCA PIN)
CN110
5
1
Q952
2SC2785
12.0
R956
56k
CN1006
AUDIO OUT MONITOR
CN114
(MINI JACK)
C955
10μ
16V
R958
1k
C956
47μ
16V
3.7
C954
47μ
16V
R957
4700
R959
100k
E900
CN1002
(8P TV)
RF AUDIO OUT (X)
8-2
RF AUDIO OUT (G)
8-1
RF MOD
AUDIO MONITOR SELECT IN(X)
4-8
KY. 710-1
AUDIO MONITOR SELECT IN(G)
4-7
KY. 710-2
2 (2/2)
Q904
2SC2785
REG GND (AUDIO)
5-5
DC. 002-1
1.3
12.0
6
4.3
R922
22k
R928
1k
4.2
CH-2 AUDIO OUT MONITOR (X)
4-4
KY. 710-5
CH-2 AUDIO OUT MONITOR (G)
4-3
KY. 710-6
C918
10μ
16V
R920
1200
TP902
R914
100k
R916
10k
3.6
C922
0.01
R918
1k
R924
1500
C920
100p
R926
1k
CN113
CN1005
CH-2 AUDIO OUT LINE
(RCA PIN)

VA-35/B (3/3)

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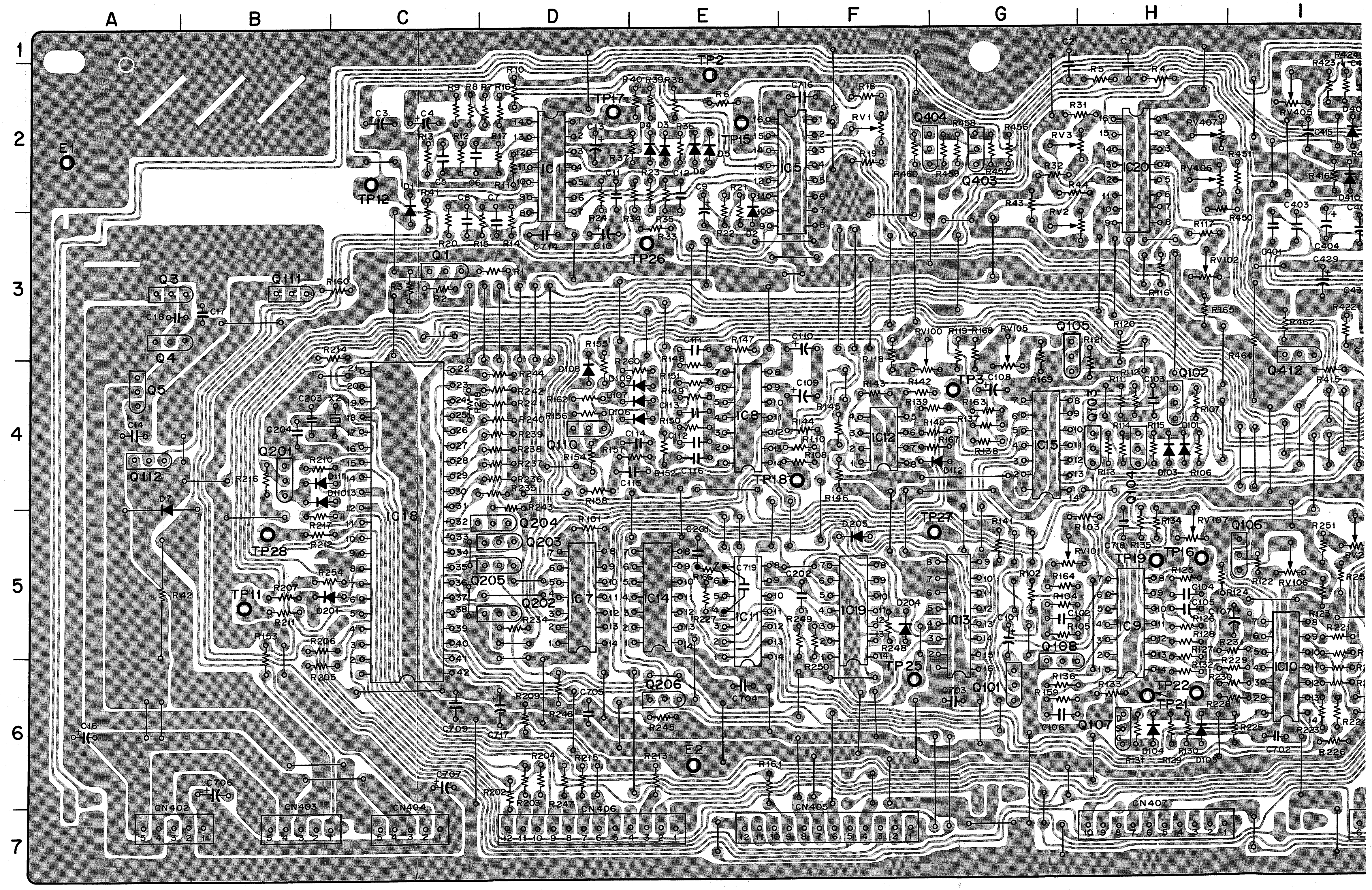
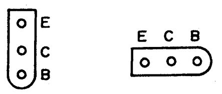
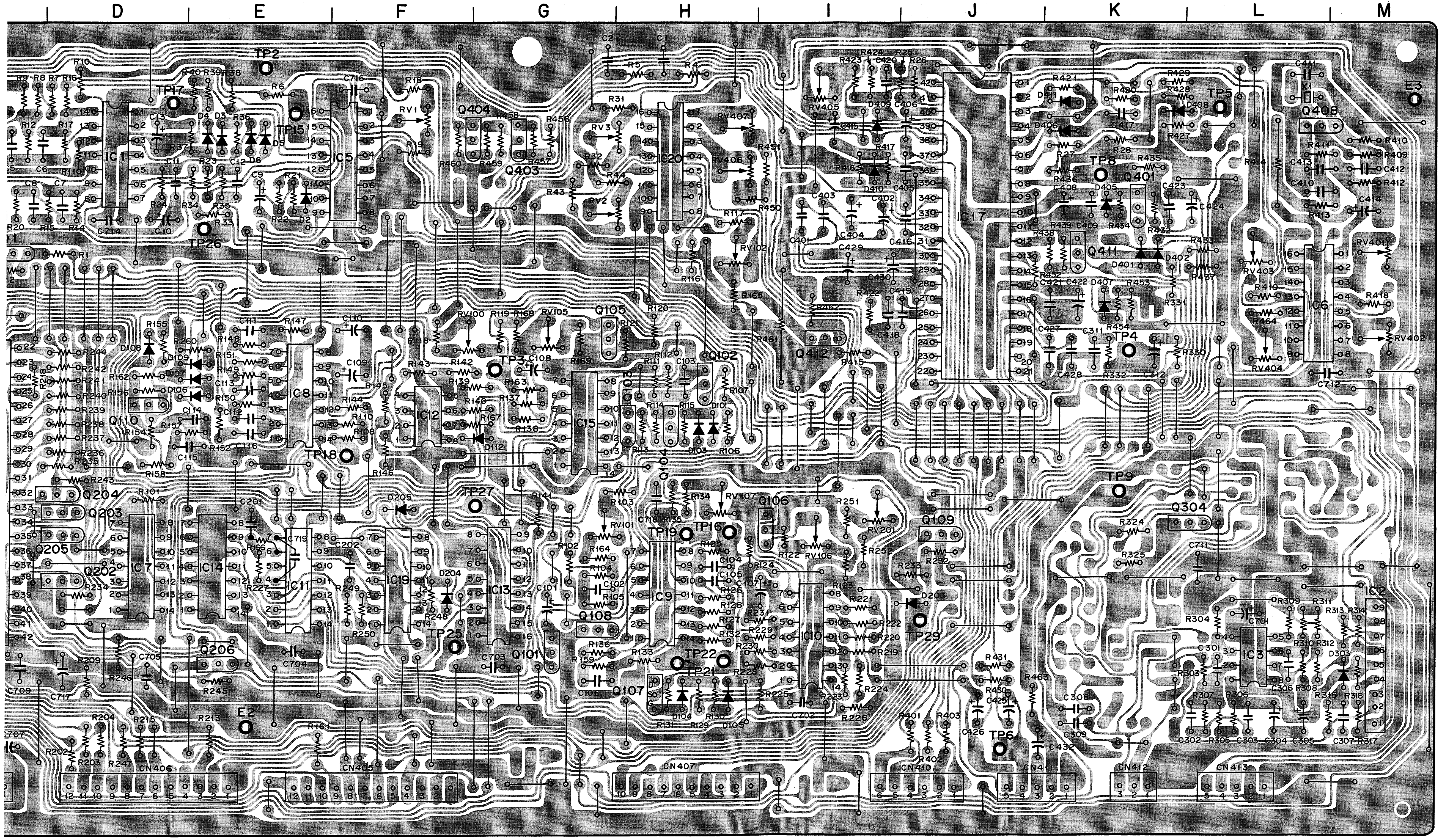
VP-5020
VP-5040

SV-74B; DRUM/CAPSTAN PWM SERVO

CN402	B - 7
CN403	B - 7
CN404	C - 7
CN405	F - 7
CN406	D - 7
CN410	J - 7
CN411	K - 7
CN412	K - 7
CN413	L - 7
D1	C - 2
D2	E - 2
D3	E - 2
D4	E - 2
D5	E - 2
D6	E - 2
D7	A - 4
D101	H - 4
D103	H - 4
D104	H - 6
D105	H - 6
D106	E - 4
D107	E - 4
D108	D - 4
D109	E - 4
D110	B - 4
D111	B - 4
D112	G - 4
D201	C - 5
D203	J - 5
D204	F - 5
D205	F - 5
D303	M - 6
D401	K - 3
D402	K - 3
D405	K - 3
D406	K - 2
D407	K - 3
D408	K - 2
D409	I - 2
D410	I - 2
D411	K - 2
E1	A - 2
E2	E - 6
E3	M - 2
IC1	D - 2
IC2	M - 6
IC3	L - 6
IC5	F - 2
IC6	L - 3
IC7	D - 5
IC8	E - 4
IC9	H - 5
IC10	I - 6
IC11	E - 5
IC12	F - 4
IC13	G - 5
IC14	E - 5
IC15	G - 4
IC17	J - 3
IC18	C - 5
IC19	F - 5
IC20	H - 2
Q1	C - 3
Q3	A - 3
Q4	A - 3
Q5	A - 4
Q101	G - 6
Q102	H - 4
Q103	H - 4
Q104	H - 4
Q105	G - 4
Q106	I - 5
Q107	H - 6
Q108	G - 6
Q109	J - 5
Q110	D - 4
Q111	B - 3
Q112	A - 4
Q201	B - 4
Q202	D - 5
Q203	D - 5
Q204	D - 5
Q205	D - 5
Q206	E - 6
Q304	L - 5
Q401	K - 3
Q403	G - 2
Q404	G - 2
Q408	L - 2
Q411	K - 3
Q412	I - 3
RV1	F - 2
RV2	G - 3
RV3	H - 2
RV100	G - 3
RV101	H - 5
RV102	H - 3
RV105	G - 4
RV106	I - 5
RV107	H - 4
RV201	I - 5
RV401	M - 3
RV402	M - 3
RV403	L - 3
RV404	L - 4
RV405	I - 2
RV406	H - 2
RV407	H - 2
TP2	E - 2
TP3	G - 4
TP4	K - 4
TP5	L - 2
TP6	J - 6
TP8	K - 2
TP9	K - 5
TP11	B - 5
TP12	C - 2
TP15	E - 2
TP16	H - 5
TP17	D - 2
TP18	F - 4
TP19	H - 5
TP21	H - 6
TP22	H - 6
TP25	F - 6
TP26	E - 3
TP27	G - 5
TP28	B - 5
TP29	J - 5
X1	L - 2
X2	C - 4


A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
IC1
IC5
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC15
IC18
IC19
IC20
Q1
Q3
Q4
Q5
Q101
Q102
Q105
Q106
Q107
Q108
Q110
Q111
Q112
Q201
Q202
Q203
Q204
Q205
Q206
Q403
Q404
Q412
TP2
TP3
TP11
TP12
TP15
TP16
TP17
TP18
TP19
TP21
TP22
TP25
TP26
TP27
TP28
E1
E2
CN402
CN403
CN404
CN405
CN406
CN407




D
E
F
G
H
I
J
K
L
M
IC1
IC5
IC20
IC17
IC6
IC8
IC12
IC15
IC7
IC14
IC11
IC19
IC13
IC9
IC10
IC3
IC2
TP2
TP17
TP15
TP26
TP5
TP8
TP4
TP3
TP18
TP27
TP19
TP16
TP22
TP21
TP25
TP29
TP6
TP9
E2
E3
Q404
Q403
Q401
Q411
Q408
Q412
Q105
Q102
Q106
Q109
Q304
Q110
Q204
Q203
Q205
Q202
Q206
Q108
Q101
Q107
CN406
CN405
CN407
CN410
CN411
CN412
CN413

SV-74B -SOLDERING SIDE-
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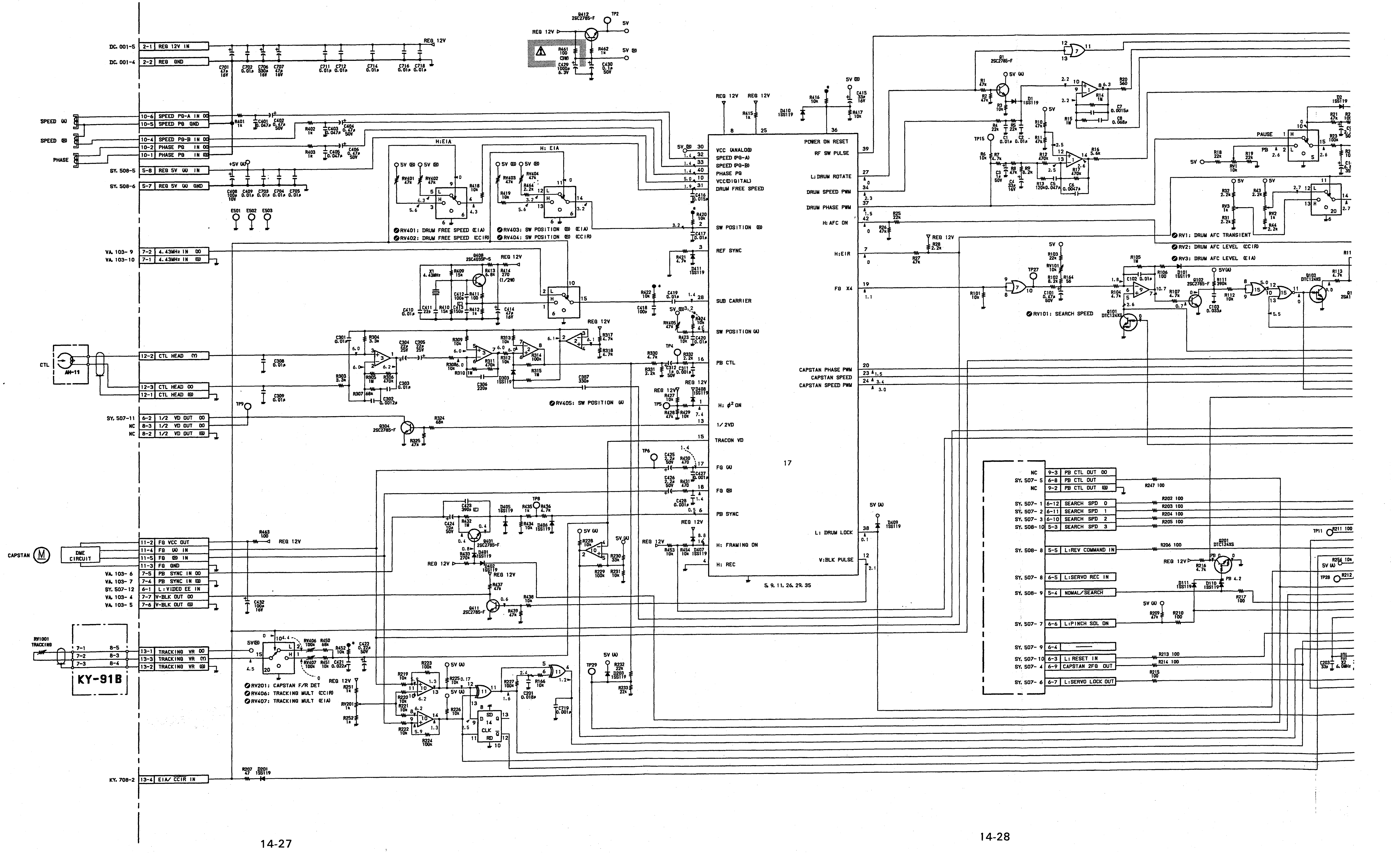
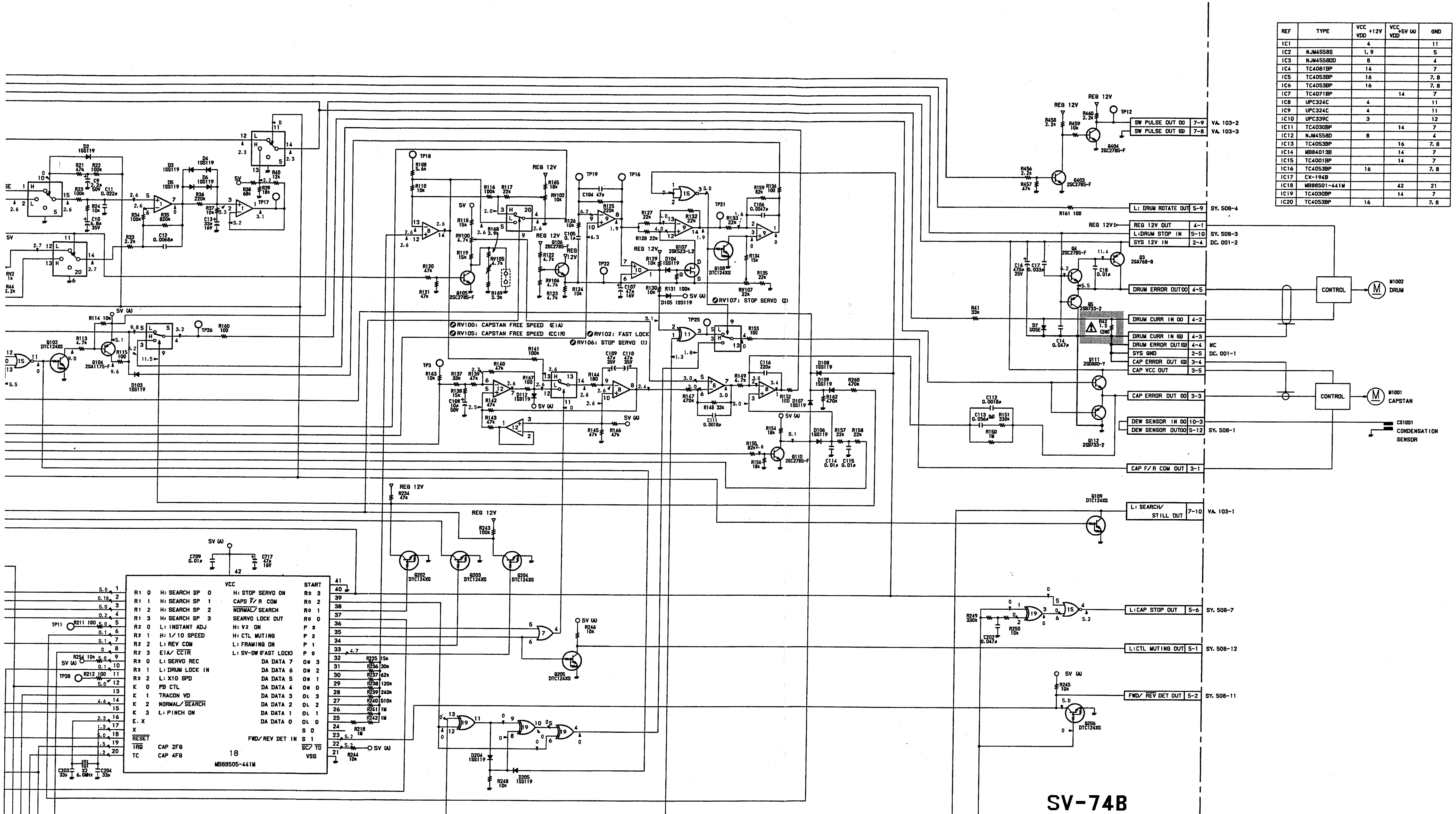
VP-5040

SV-74B; DRUM/CAPSTAN PWM SERVO


REG 12V IN
REG GND
SPEED PG-A IN
SPEED PG GND
SPEED PG-B IN
PHASE PG IN
PHASE PG IN
REG 5V (A) IN
REG 5V (A) GND
4.43MHz IN
4.43MHz IN
CTL HEAD
CTL HEAD
CTL HEAD
1/2 VD OUT
1/2 VD OUT
1/2 VD OUT
FG VCC OUT
FG (A) IN
FG (B) IN
FG GND
PB SYNC IN
PB SYNC IN
L: VIDEO EE IN
V-BLK OUT
V-BLK OUT
TRACKING VR
TRACKING VR
TRACKING VR
EIA/ CCIR IN
CTL
AH-11
CAPSTAN
DME CIRCUIT
KY-91B
H: EIA
RV401: DRUM FREE SPEED (EIA)
RV402: DRUM FREE SPEED (CCIR)
RV403: SW POSITION (B) (EIA)
RV404: SW POSITION (B) (CCIR)
RV405: SW POSITION (A)
RV201: CAPSTAN F/R DET
RV406: TRACKING MULT (CCIR)
RV407: TRACKING MULT (EIA)
VCC (ANALOG)
SPEED (PG-A)
SPEED (PG-B)
PHASE PG
VCC (DIGITAL)
DRUM FREE SPEED
SW POSITION (B)
REF SYNC
SUB CARRIER
SW POSITION (A)
PB CTL
H: φ2 ON
1/2VD
TRACON VD
FG (A)
FG (B)
PB SYNC
H: FRAMING ON
H: REC
POWER ON RESET
RF SW PULSE
L: DRUM ROTATE
DRUM SPEED PWM
DRUM PHASE PWM
H: AFC ON
H: EIR
FG X4
CAPSTAN PHASE PWM
CAPSTAN SPEED
CAPSTAN SPEED PWM
L: DRUM LOCK
V: BLK PULSE
17
RV1: DRUM AFC TRANSIENT
RV2: DRUM AFC LEVEL (CCIR)
RV3: DRUM AFC LEVEL (EIA)
RV101: SEARCH SPEED
PAUSE
PB CTL OUT
PB CTL OUT
PB CTL OUT
SEARCH SPD 0
SEARCH SPD 1
SEARCH SPD 2
SEARCH SPD 3
L: REV COMMAND IN
L: SERVO REC IN
NOMAL/SEARCH
L: PINCH SOL ON
L: RESET IN
CAPSTAN 2FG OUT
L: SERVO LOCK OUT


SW PULSE OUT (X) 7-9 VA. 103-2
SW PULSE OUT (G) 7-8 VA. 103-3
L: DRUM ROTATE OUT 5-9 SY. 508-4
REG 12V OUT 4-1
L:DRUM STOP IN 5-10 SY. 508-3
SYS 12V IN 2-4 DC. 001-2
DRUM ERROR OUT(X) 4-5
DRUM CURR IN (X) 4-2
DRUM CURR IN (G) 4-3
DRUM ERROR OUT(G) 4-4 NC
SYS GND 2-5 DC. 001-1
CAP ERROR OUT (G) 3-4
CAP VCC OUT 3-5
CAP ERROR OUT (X) 3-3
DEW SENSOR IN (X) 10-3
DEW SENSOR OUT(X) 5-12 SY. 508-1
CAP F/R COM OUT 3-1
L: SEARCH/ STILL OUT 7-10 VA. 103-1
L:CAP STOP OUT 5-6 SY. 508-7
L:CTL MUTING OUT 5-1 SY. 508-12
FWD/ REV DET OUT 5-2 SY. 508-11
CONTROL
M1002 DRUM
M1001 CAPSTAN
CS1001 CONDENSATION SENSOR
RV100: CAPSTAN FREE SPEED (EIA)
RV105: CAPSTAN FREE SPEED (CCIR)
RV102: FAST LOCK
RV106: STOP SERVO (1)
RV107: STOP SERVO (2)
MB88505-441M
H: SEARCH SP 0
H: SEARCH SP 1
H: SEARCH SP 2
H: SEARCH SP 3
L: INSTANT ADJ
H: 1/10 SPEED
L: REV COM
EIA/ CCIR
L: SERVO REC
L: DRUM LOCK IN
L: X10 SPD
PB CTL
TRACON VD
NORMAL/ SEARCH
L: PINCH ON
H: STOP SERVO ON
CAPS F/ R COM
NORMAL/ SEARCH
SEARVO LOCK OUT
H: V2 ON
H: CTL MUTING
L: FRAMING ON
L: SV-SW (FAST LOCK)
DA DATA 7
DA DATA 6
DA DATA 5
DA DATA 4
DA DATA 3
DA DATA 2
DA DATA 1
DA DATA 0
FWD/ REV DET IN
CAP 2FG
CAP 4FG

REF	TYPE	VCC VDD +12V	VCC VDD +5V (A)	GND
IC1		4		11
IC2	NJM4558S	1, 9		5
IC3	NJM4558DD	8		4
IC4	TC4081BP	14		7
IC5	TC4053BP	16		7, 8
IC6	TC4053BP	16		7, 8
IC7	TC4071BP		14	7
IC8	UPC324C	4		11
IC9	UPC324C	4		11
IC10	UPC339C	3		12
IC11	TC4030BP		14	7
IC12	NJM4558D	8		4
IC13	TC4053BP		16	7, 8
IC14	MB84013B		14	7
IC15	TC4001BP		14	7
IC16	TC4053BP	16		7, 8
IC17	CX-194B			
IC18	MB88501-441M		42	21
IC19	TC4030BP		14	7
IC20	TC4053BP	16		7, 8

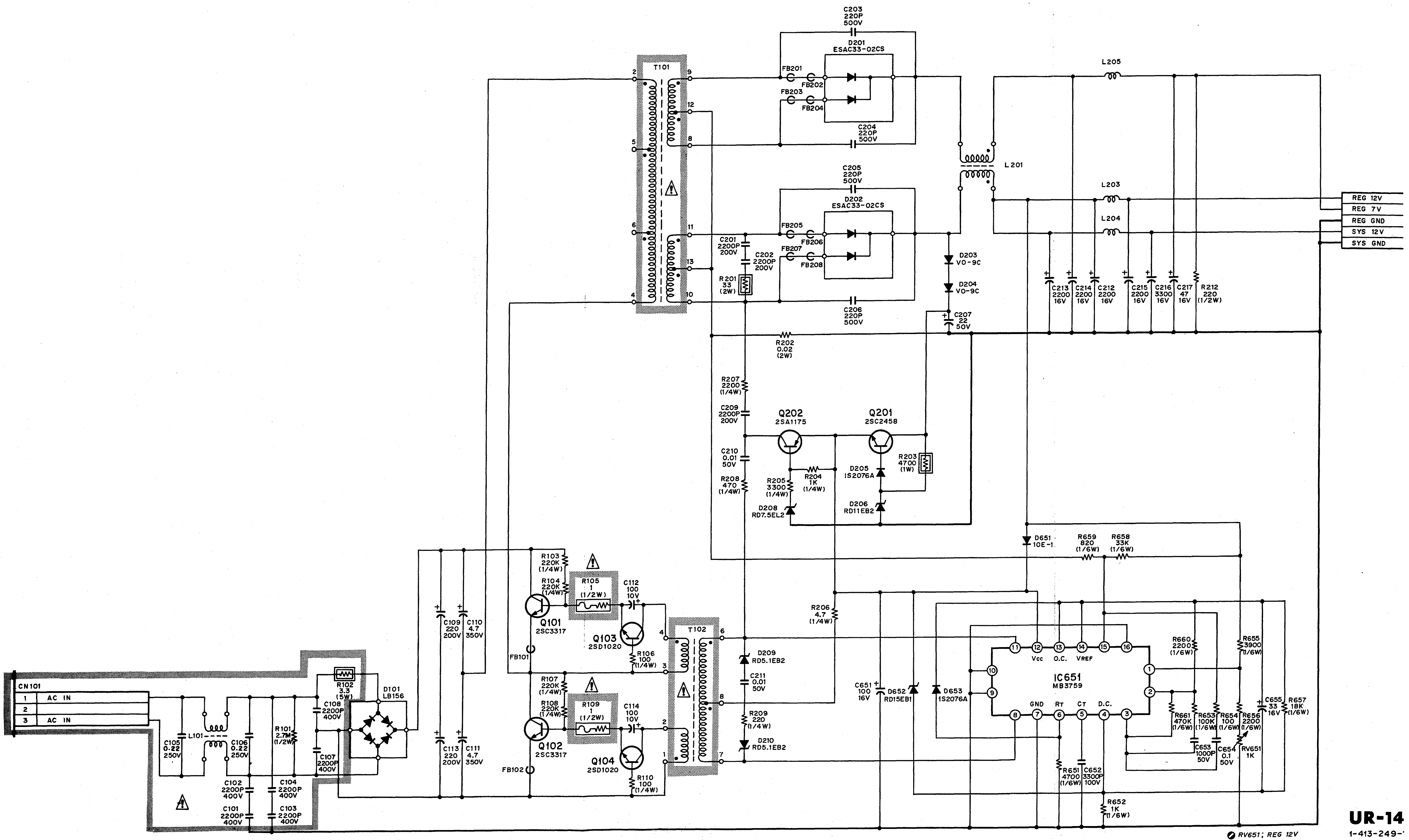
SV-74B

1-618-604-21
VP-5040

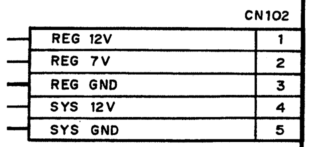
NOTE:

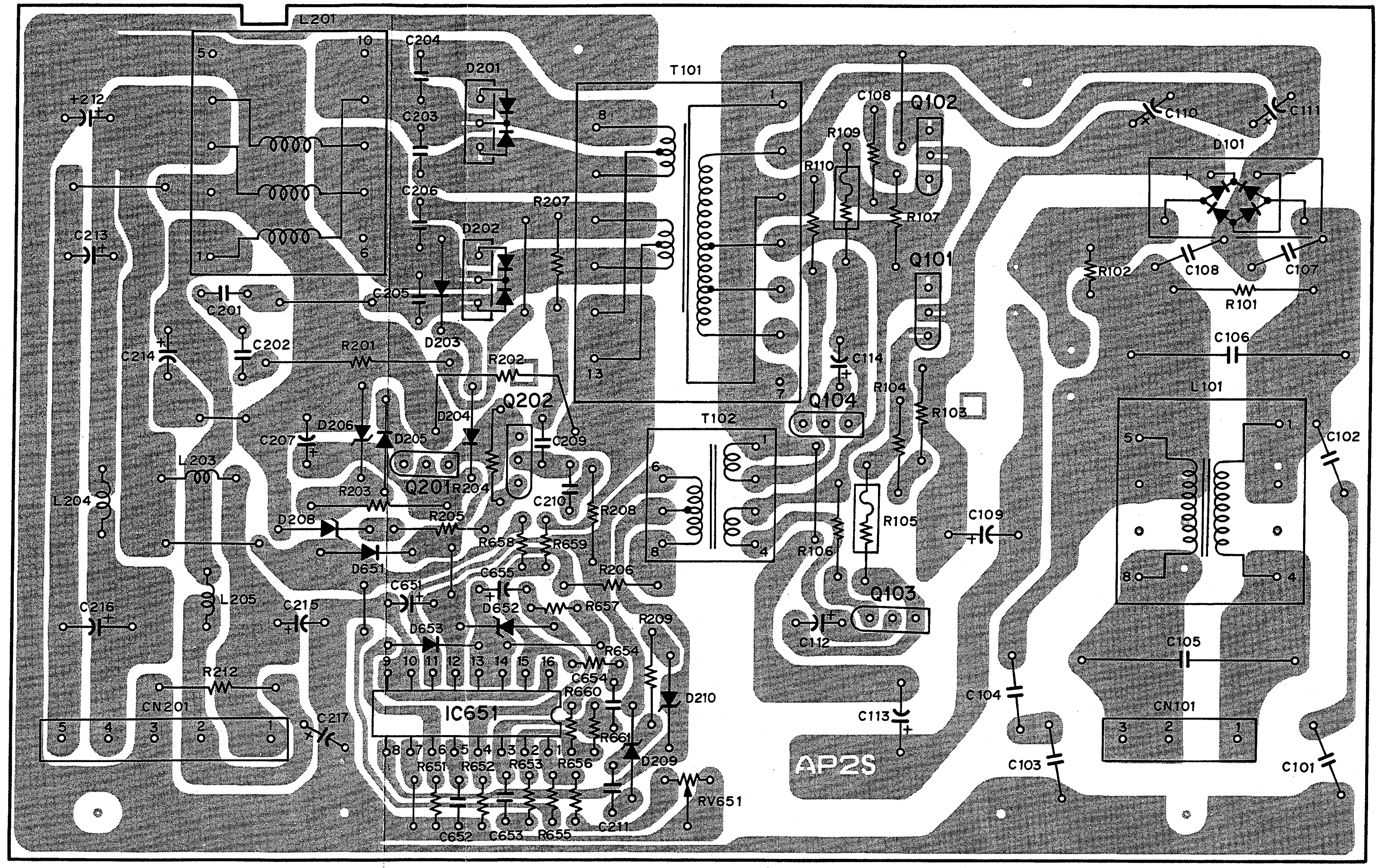
The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

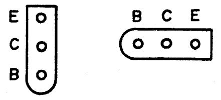
UR-14E; SWITCHING REGULATOR


CN101
1 AC IN
2
3 AC IN
C105 0.22 250V
L101
C106 0.22 250V
C102 2200P 400V
C101 2200P 400V
C104 2200P 400V
C103 2200P 400V
R101 2.7M (1/2W)
R102 3.3 (5W)
C108 2200P 400V
C107 2200P 400V
D101 LB156
C109 220 200V
C110 4.7 350V
C113 220 200V
C111 4.7 350V
R103 220K (1/4W)
R104 220K (1/4W)
R105 1 (1/2W)
C112 100 10V
Q101 2SC3317
Q103 2SD1020
R106 100 (1/4W)
FB101
R107 220K (1/4W)
R108 220K (1/4W)
R109 1 (1/2W)
C114 100 10V
Q102 2SC3317
Q104 2SD1020
R110 100 (1/4W)
FB102
T102
T101
C203 220P 500V
D201 ESAC33-02CS
FB201
FB202
FB203
FB204
C204 220P 500V
C205 220P 500V
D202 ESAC33-02CS
FB205
FB206
FB207
FB208
C201 2200P 200V
C202 2200P 200V
R201 33 (2W)
C206 220P 500V
D203 VO-9C
D204 VO-9C
C207 22 50V
R202 0.02 (2W)
L205
L201
L203
L204
C213 2200 16V
C214 2200 16V
C212 2200 16V
C215 2200 16V
C216 3300 16V
C217 47 16V
R212 220 (1/2W)
REG 12V
REG 7V
REG GND
SYS 12V
SYS GND
R207 2200 (1/4W)
C209 2200P 200V
C210 0.01 50V
R208 470 (1/4W)
Q202 2SA1175
Q201 2SC2458
R205 3300 (1/4W)
R204 1K (1/4W)
D208 RD7.5EL2
D205 1S2076A
R203 4700 (1W)
D206 RD11EB2
R206 4.7 (1/4W)
D209 RD5.1EB2
C211 0.01 50V
R209 220 (1/4W)
D210 RD5.1EB2
D651 10E-1
R659 820 (1/6W)
R658 33K (1/6W)
C651 100 16V
D652 RD15EB1
D653 1S2076A
IC651 MB3759
Vcc
O.C.
VREF
GND
RT
CT
D.C.
R651 4700 (1/6W)
C652 3300P 100V
R652 1K (1/6W)
R660 2200 (1/6W)
R661 470K (1/6W)
R653 100K (1/6W)
R654 100 (1/6W)
R656 2200 (1/6W)
R655 3900 (1/6W)
C655 33 16V
R657 18K (1/6W)
C653 1000P 50V
C654 0.1 50V
RV651 1K
RV651; REG 12V

UR-14
1-413-249-
VP-5040


CN102
REG 12V 1
REG 7V 2
REG GND 3
SYS 12V 4
SYS GND 5


L201
C204
D201
T101
C108
Q102
C110
C111
D101
C212
C203
R109
R110
C206
R207
D202
R107
C213
Q101
R102
C108
C107
R101
C205
C201
C202
D203
R201
R202
C214
C114
C106
Q202
Q104
R104
R103
L101
D206
D204
T102
C102
C207
D205
C209
L203
Q201
R204
R203
C210
R208
L204
R205
D208
R105
C109
R658
R659
D651
R106
C655
C651
R206
Q103
C216
L205
C215
D653
D652
R657
C112
R209
R654
C105
C654
R212
R660
D210
C104
CN201
IC651
CN101
C217
C113
R661
R651
R652
R653
R656
D209
AP2S
C103
C101
RV651
C652
C653
R655
C211



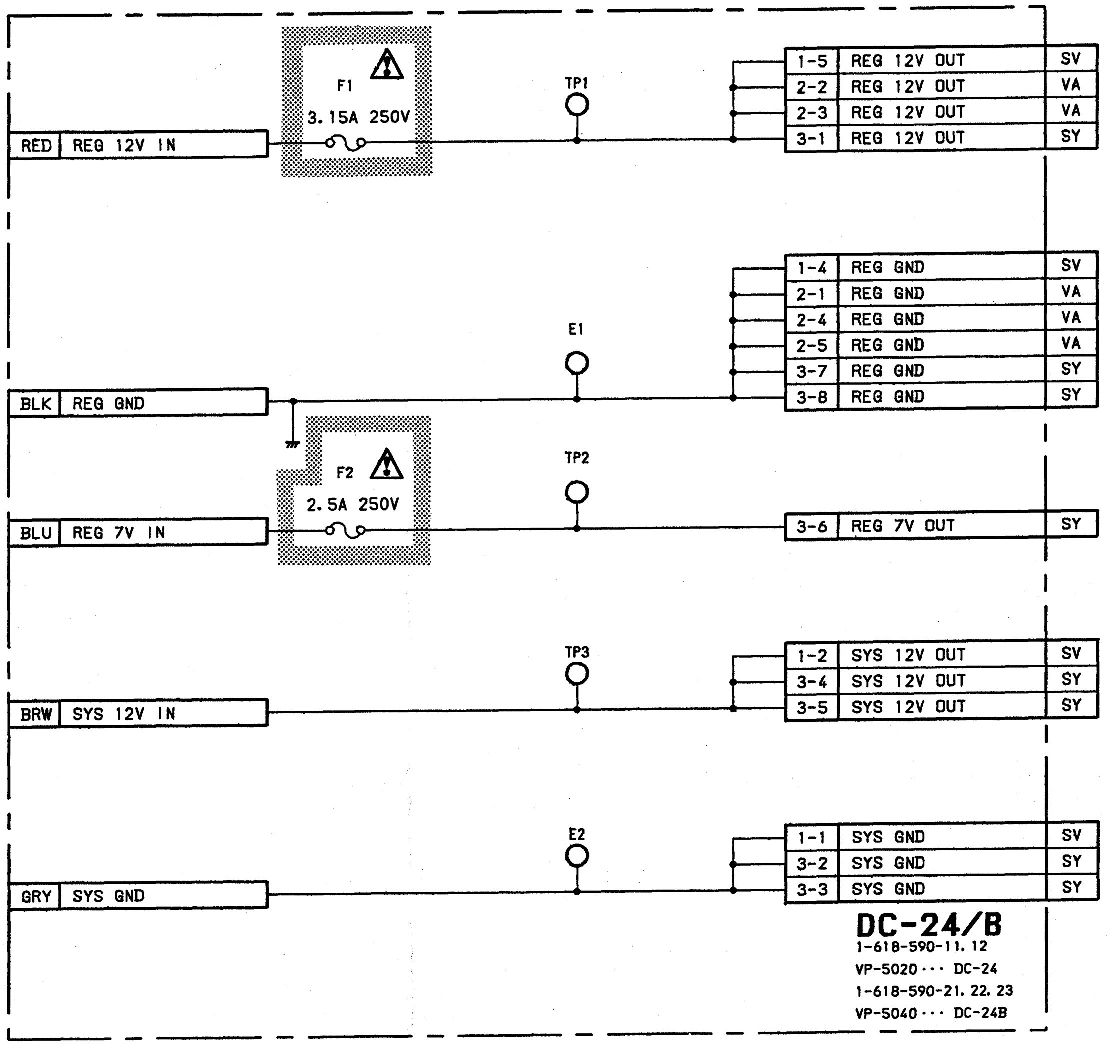
UR-14E —SOLDERING SIDE—
1-413-249-11
VP-5040

NOTE:

The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

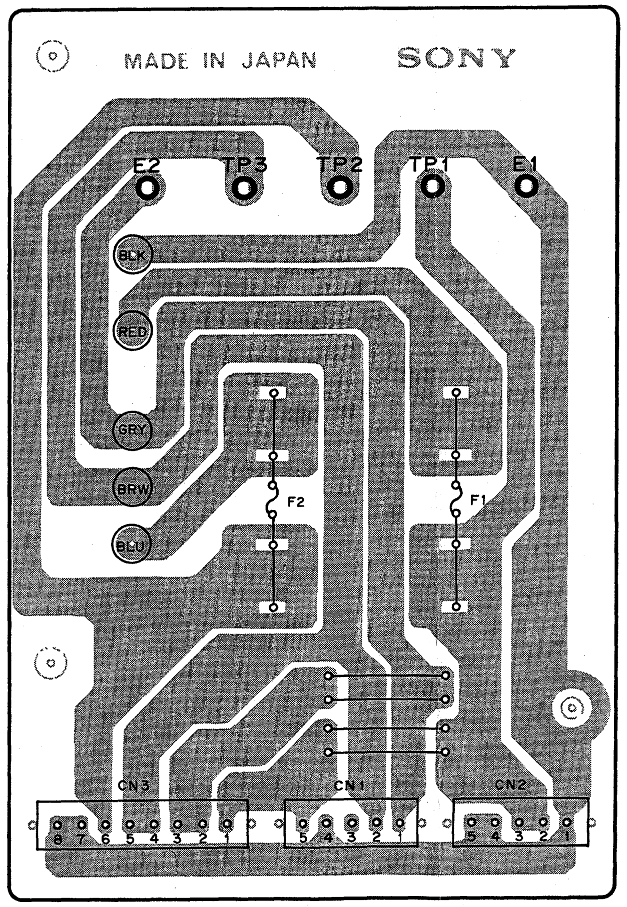
UR-14E
1-413-249-11
VP-5040

DC-24B; DC SUPPLY/FUSE


F1
3.15A 250V
TP1
RED REG 12V IN
1-5 REG 12V OUT SV
2-2 REG 12V OUT VA
2-3 REG 12V OUT VA
3-1 REG 12V OUT SY
E1
BLK REG GND
1-4 REG GND SV
2-1 REG GND VA
2-4 REG GND VA
2-5 REG GND VA
3-7 REG GND SY
3-8 REG GND SY
F2
2.5A 250V
TP2
BLU REG 7V IN
3-6 REG 7V OUT SY
TP3
BRW SYS 12V IN
1-2 SYS 12V OUT SV
3-4 SYS 12V OUT SY
3-5 SYS 12V OUT SY
E2
GRY SYS GND
1-1 SYS GND SV
3-2 SYS GND SY
3-3 SYS GND SY
DC-24/B
1-618-590-11, 12
VP-5020 ··· DC-24
1-618-590-21, 22, 23
VP-5040 ··· DC-24B

NOTE:

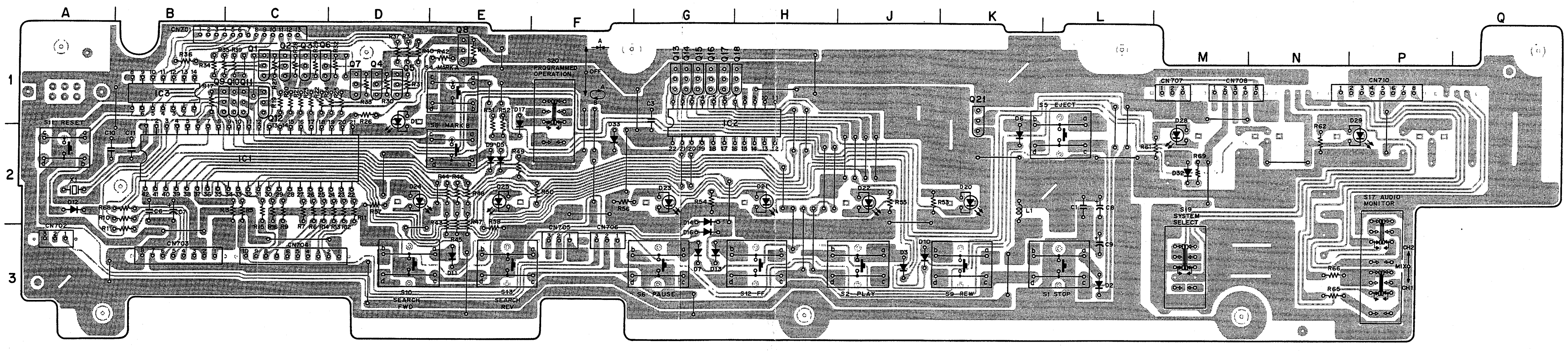
The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

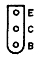

MADE IN JAPAN
SONY
E2
TP3
TP2
TP1
E1
BLK
RED
GRY
BRW
BLU
F2
F1
CN3
CN1
CN2
8 7 6 5 4 3 2 1
5 4 3 2 1
5 4 3 2 1

DC-24B -SOLDERING SIDE-
1-618-590-21, 22, 23
VP-5040

KY-91B; FUNCTION KEY AND DISPLAY

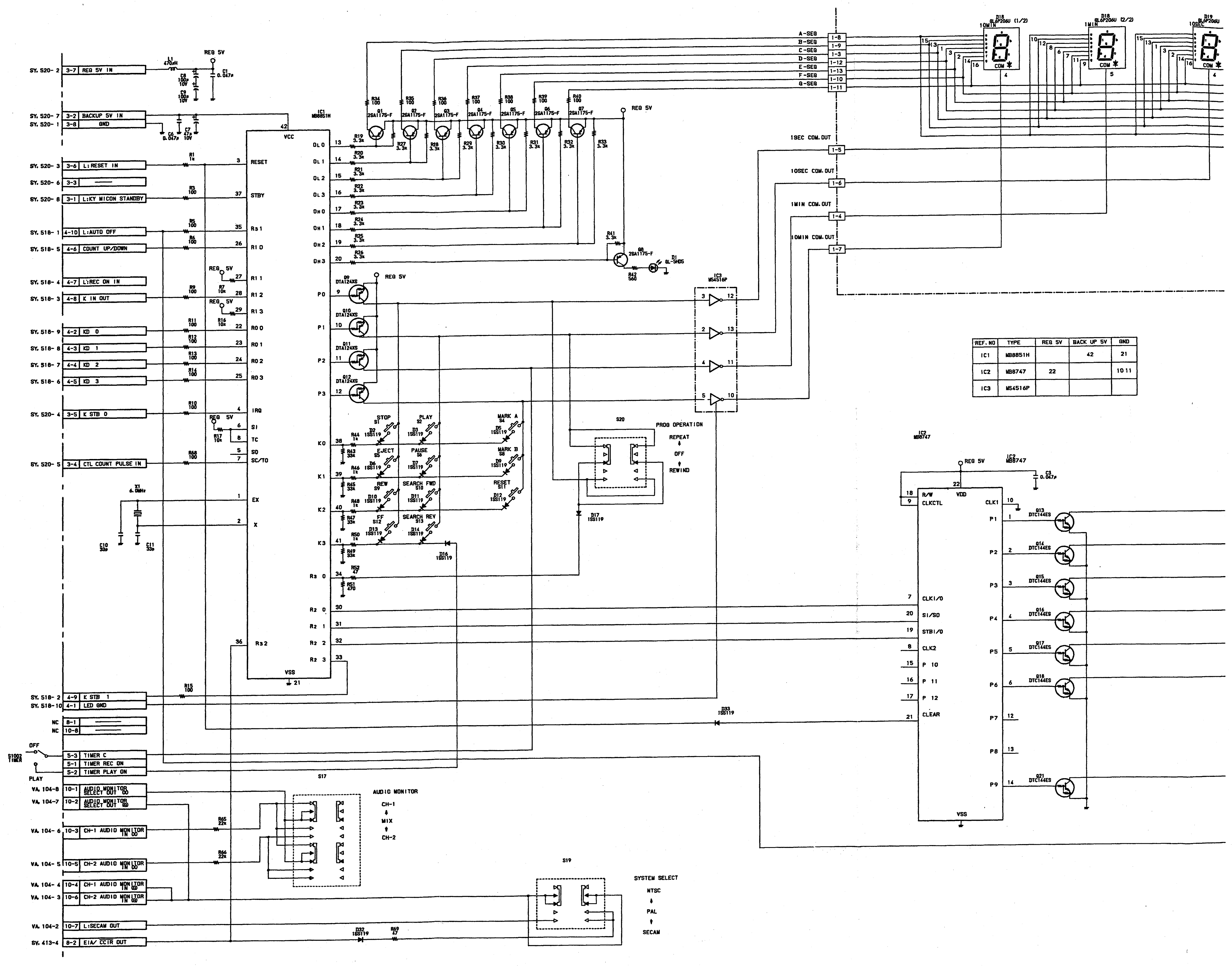
CN701	C - 1	Q1	C - 1
CN702	A - 3	Q2	C - 1
CN703	B - 3	Q3	C - 1
CN704	C - 3	Q4	D - 1
CN705	F - 3	Q5	D - 1
CN706	F - 3	Q6	C - 1
CN707	M - 1	Q7	D - 1
CN708	M - 1	Q8	E - 1
CN710	P - 1	Q9	C - 1
		Q10	C - 1
D1	D - 1	Q11	C - 1
D2	L - 3	Q12	C - 1
D3	J - 3	Q13	G - 1
D5	E - 2	Q14	G - 1
D6	K - 2	Q15	G - 1
D7	G - 3	Q16	G - 1
D9	E - 2	Q17	G - 1
D10	J - 3	Q18	H - 1
D11	E - 3	Q21	K - 1
D12	A - 2		
D13	G - 3	S1	L - 3
D14	G - 2	S2	J - 3
D16	G - 3	S4	E - 1
D17	E - 2	S5	L - 2
D20	K - 2	S6	G - 3
D21	H - 2	S8	E - 2
D22	J - 2	S9	K - 3
D23	G - 2	S10	D - 3
D24	D - 2	S11	A - 2
D25	E - 2	S12	H - 3
D28	M - 2	S13	E - 3
D29	P - 2	S17	P - 3
D32	M - 2	S19	M - 3
D33	F - 2	S20	F - 1
IC1	C - 2	X1	A - 2
IC2	G - 1		
IC3	B - 1		


A
B
C
D
E
F
G
H
J
K
L
M
N
P
Q
1
2
3
S11 RESET
IC3
IC1
CN701
CN702
CN703
CN704
S8 MARK
S20 PROGRAMMED OPERATION
OFF
IC2
Q21
S5 EJECT
CN707
CN708
CN710
S10 SEARCH FWD
S13 SEARCH REV
CN705
CN706
S6 PAUSE
S12 FF
S2 PLAY
S9 REW
S1 STOP
S19 SYSTEM SELECT
S17 AUDIO MONITOR
CH2
MIX
CH1

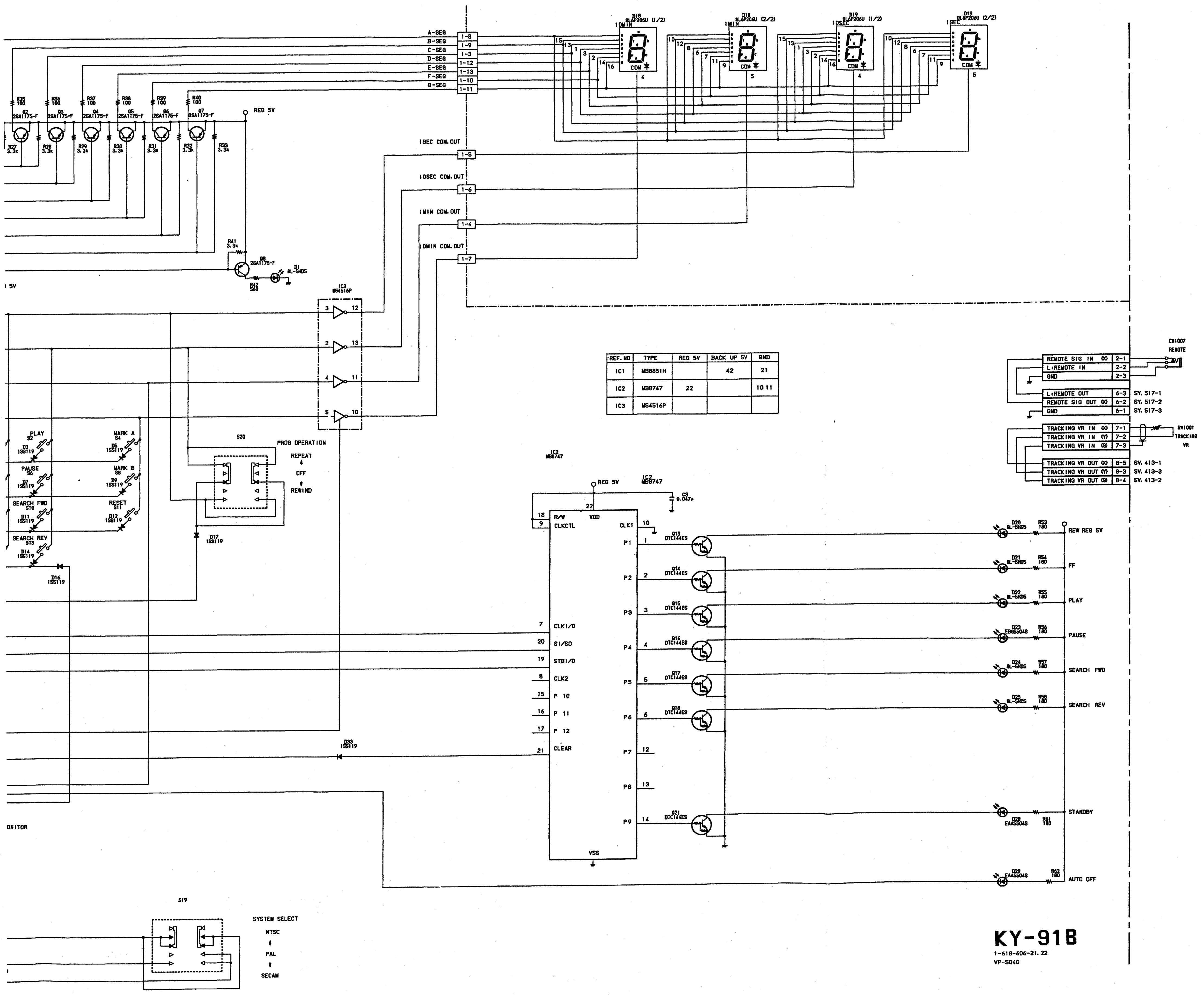


KY-91B – SOLDERING SIDE –
1-618-606-21,22
VP-5040

KY-91B; FUNCTION KEY AND DISPLAY

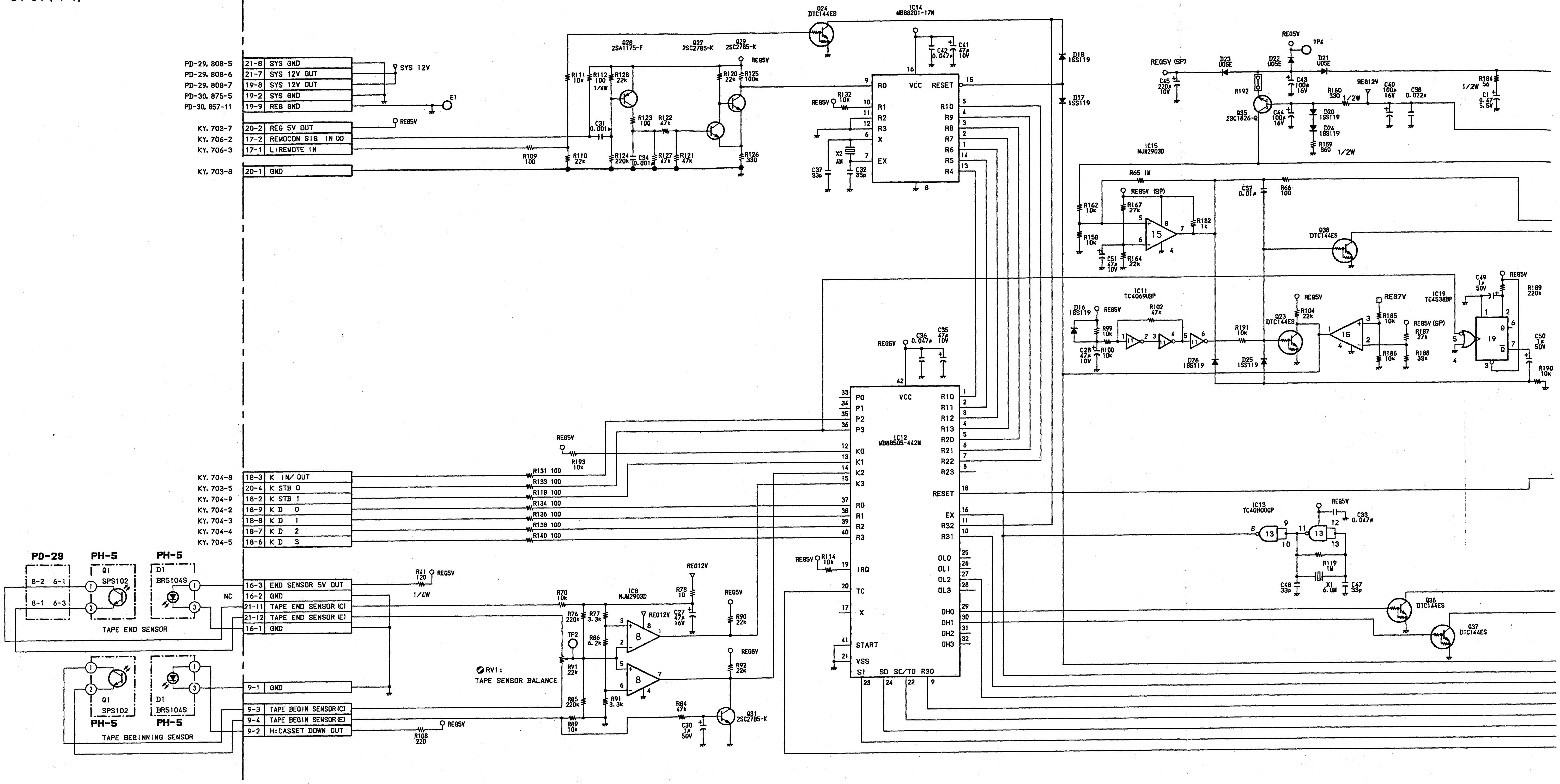

SY. 520- 2 3-7 REG 5V IN
SY. 520- 7 3-2 BACKUP 5V IN
SY. 520- 1 3-8 GND
SY. 520- 3 3-6 L:RESET IN
SY. 520- 6 3-3
SY. 520- 8 3-1 L:KY MICON STANDBY
SY. 518- 1 4-10 L:AUTO OFF
SY. 518- 5 4-6 COUNT UP/DOWN
SY. 518- 4 4-7 L:REC ON IN
SY. 518- 3 4-8 K IN OUT
SY. 518- 9 4-2 KD 0
SY. 518- 8 4-3 KD 1
SY. 518- 7 4-4 KD 2
SY. 518- 6 4-5 KD 3
SY. 520- 4 3-5 K STB 0
SY. 520- 5 3-4 CTL COUNT PULSE IN
SY. 518- 2 4-9 K STB 1
SY. 518-10 4-1 LED GND
NC 8-1
NC 10-8
S1002 TIMER
OFF
PLAY
5-3 TIMER C
5-1 TIMER REC ON
5-2 TIMER PLAY ON
VA. 104-8 10-1 AUDIO MONITOR SELECT OUT
VA. 104-7 10-2 AUDIO MONITOR SELECT OUT
VA. 104- 6 10-3 CH-1 AUDIO MONITOR IN
VA. 104- 5 10-5 CH-2 AUDIO MONITOR IN
VA. 104- 4 10-4 CH-1 AUDIO MONITOR IN
VA. 104- 3 10-6 CH-2 AUDIO MONITOR IN
VA. 104-2 10-7 L:SECAM OUT
SV. 413-4 8-2 EIA/ CCIR OUT
L1 470μH
REG 5V
IC1 MB8851H
VCC
RESET
STBY
RESET
X1 6.0MHz
VSS
IC3 M54516P
IC2 MB8747
A-SEG
B-SEG
C-SEG
D-SEG
E-SEG
F-SEG
G-SEG
1SEC COM. OUT
10SEC COM. OUT
1MIN COM. OUT
10MIN COM. OUT
D18 BL6P206U (1/2) 10MIN
D18 BL6P206U (2/2) 1MIN
D19 BL6P206U 10SEC
COM
Q1–Q7 2SA1175-F
Q8 2SA1175-F
D1 SL-5H05
Q9–Q12 DTA124XS
STOP S1
PLAY S2
MARK A S4
EJECT S5
PAUSE S6
MARK B S8
REW S9
SEARCH FWD S10
RESET S11
FF S12
SEARCH REV S13
S20
PROG OPERATION
REPEAT
OFF
REWIND
S17
AUDIO MONITOR
CH-1
MIX
CH-2
S19
SYSTEM SELECT
NTSC
PAL
SECAM
R/W
CLKCTL
CLK1
CLK1/0
SI/SO
STB1/0
CLK2
CLEAR
Q13–Q18, Q21 DTC144ES

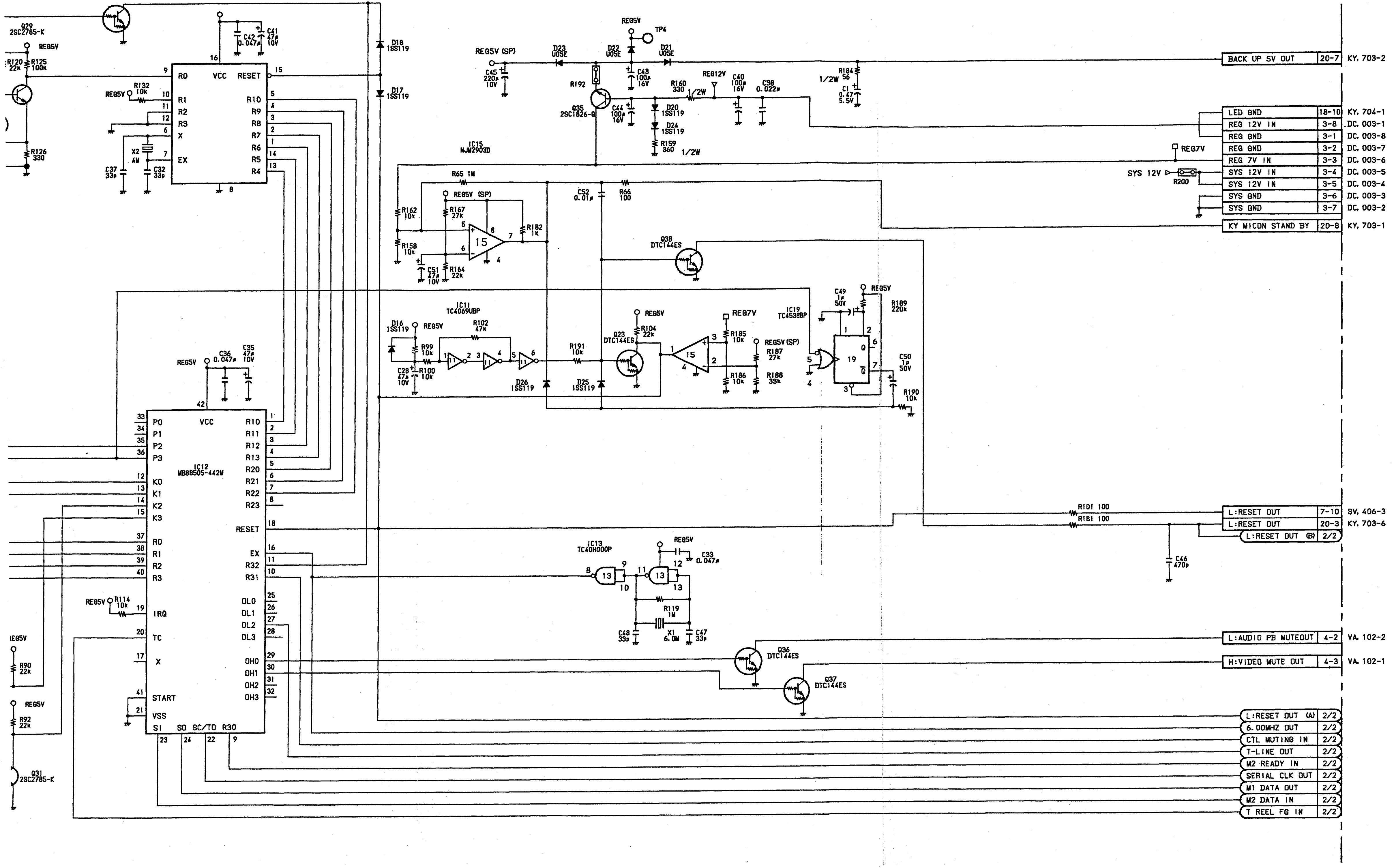
REF. NO	TYPE	REG 5V	BACK UP 5V	GND
IC1	MB8851H		42	21
IC2	MB8747	22		10 11
IC3	M54516P			


A-SEG
B-SEG
C-SEG
D-SEG
E-SEG
F-SEG
G-SEG
1-8
1-9
1-3
1-12
1-13
1-10
1-11
D18
GL6P206U (1/2)
10MIN
D18
GL6P206U (2/2)
1MIN
D19
GL6P206U (1/2)
10SEC
D19
GL6P206U (2/2)
1SEC
COM
R35 100
R36 100
R37 100
R38 100
R39 100
R40 100
Q2 2SA1175-F
Q3 2SA1175-F
Q4 2SA1175-F
Q5 2SA1175-F
Q6 2SA1175-F
Q7 2SA1175-F
R27 3.3k
R28 3.3k
R29 3.3k
R30 3.3k
R31 3.3k
R32 3.3k
R33 3.3k
REG 5V
1SEC COM.OUT
1-5
10SEC COM.OUT
1-6
1MIN COM.OUT
1-4
10MIN COM.OUT
1-7
R41 3.3k
Q8 2SA1175-F
D1 GL-5HD5
R42 560
5V
IC3 M54516P
PLAY S2
D3 1SS119
MARK A S4
D5 1SS119
PAUSE S6
D7 1SS119
MARK B S8
D9 1SS119
SEARCH FWD S10
D11 1SS119
RESET S11
D12 1SS119
SEARCH REV S13
D14 1SS119
D16 1SS119
S20
PROG OPERATION
REPEAT
OFF
REWIND
D17 1SS119
IC2 MB8747
REG 5V
C3 0.047μ
R/W
CLKCTL
VDD
CLK1
CLKI/O
SI/SO
STBI/O
CLK2
P 10
P 11
P 12
CLEAR
P1
P2
P3
P4
P5
P6
P7
P8
P9
VSS
D33 1SS119
Q13 DTC144ES
Q14 DTC144ES
Q15 DTC144ES
Q16 DTC144ES
Q17 DTC144ES
Q18 DTC144ES
Q21 DTC144ES
D20 GL-5HD5
R53 180
REW REG 5V
D21 GL-5HD5
R54 180
FF
D22 GL-5HD5
R55 180
PLAY
D23 EBGS504S
R56 180
PAUSE
D24 GL-5HD5
R57 180
SEARCH FWD
D25 GL-5HD5
R58 180
SEARCH REV
D28 EAA5504S
R61 180
STANDBY
D29 EAA5504S
R62 180
AUTO OFF
CN1007
REMOTE
REMOTE SIG IN (X) 2-1
L:REMOTE IN 2-2
GND 2-3
L:REMOTE OUT 6-3 SY. 517-1
REMOTE SIG OUT (X) 6-2 SY. 517-2
GND 6-1 SY. 517-3
TRACKING VR IN (X) 7-1
TRACKING VR IN (Y) 7-2
TRACKING VR IN (G) 7-3
RV1001
TRACKING
VR
TRACKING VR OUT (X) 8-5 SV. 413-1
TRACKING VR OUT (Y) 8-3 SV. 413-3
TRACKING VR OUT (G) 8-4 SV. 413-2
S19
SYSTEM SELECT
NTSC
PAL
SECAM
ONITOR
KY-91B
1-618-606-21, 22
VP-5040

REF. NO	TYPE	REG 5V	BACK UP 5V	GND
IC1	MB8851H		42	21
IC2	MB8747	22		10 11
IC3	M54516P			

SY-51 (1/2); SYSTEM CONTROL


PD-29, 808-5 | 21-8 | SYS GND
PD-29, 808-6 | 21-7 | SYS 12V OUT
PD-29, 808-7 | 19-8 | SYS 12V OUT
PD-30, 875-5 | 19-2 | SYS GND
PD-30, 857-11 | 19-9 | REG GND
SYS 12V
E1
KY, 703-7 | 20-2 | REG 5V OUT
KY, 706-2 | 17-2 | REMOCON SIG IN (X)
KY, 706-3 | 17-1 | L:REMOTE IN
KY, 703-8 | 20-1 | GND
REG5V
KY, 704-8 | 18-3 | K IN/ OUT
KY, 703-5 | 20-4 | K STB 0
KY, 704-9 | 18-2 | K STB 1
KY, 704-2 | 18-9 | K D 0
KY, 704-3 | 18-8 | K D 1
KY, 704-4 | 18-7 | K D 2
KY, 704-5 | 18-6 | K D 3
PD-29
PH-5
Q1
SPS102
D1
BR5104S
NC
TAPE END SENSOR
16-3 | END SENSOR 5V OUT
16-2 | GND
21-11 | TAPE END SENSOR (C)
21-12 | TAPE END SENSOR (E)
16-1 | GND
9-1 | GND
9-3 | TAPE BEGIN SENSOR(C)
9-4 | TAPE BEGIN SENSOR(E)
9-2 | H:CASSET DOWN OUT
TAPE BEGINNING SENSOR
R41 120 1/4W
R108 220
RV1: TAPE SENSOR BALANCE
TP2
IC8 NJM2903D
Q31 2SC2785-K
Q24 DTC144ES
IC14 MB88201-17N
Q28 2SA1175-F
Q27 2SC2785-K
Q29 2SC2785-K
R0 VCC RESET
R1 R2 R3 X EX
R10 R9 R8 R7 R6 R5 R4
X2 4M
IC12 MB88505-442M
P0 P1 P2 P3 K0 K1 K2 K3 R0 R1 R2 R3 IRQ TC X START VSS
S1 SD SC/TO R30
VCC R10 R11 R12 R13 R20 R21 R22 R23 RESET EX R32 R31
OL0 OL1 OL2 OL3 OH0 OH1 OH2 OH3
D18 1SS119
D17 1SS119
REG5V (SP)
D23 U05E
D22 U05E
D21 U05E
TP4
REG12V
Q35 2SC1826-Q
D20 1SS119
D24 1SS119
IC15 NJM2903D
Q38 DTC144ES
IC11 TC4069UBP
D16 1SS119
Q23 DTC144ES
D26 1SS119
D25 1SS119
REG7V
IC19 TC4538BP
IC13 TC40H000P
X1 6.0M
Q36 DTC144ES
Q37 DTC144ES


Q24 DTC144ES
IC14 MB88201-17N
Q29 2SC2785-K
REG5V
IC15 NJM2903D
IC11 TC4069UBP
IC19 TC4538BP
IC12 MB88505-442M
IC13 TC40H000P
Q35 2SC1826-Q
Q38 DTC144ES
Q23 DTC144ES
Q36 DTC144ES
Q37 DTC144ES
Q31 2SC2785-K
X1 6.0M
X2 4M
TP4
REG5V (SP)
REG12V
REG7V
SYS 12V
BACK UP 5V OUT 20-7 KY. 703-2
LED GND 18-10 KY. 704-1
REG 12V IN 3-8 DC. 003-1
REG GND 3-1 DC. 003-8
REG GND 3-2 DC. 003-7
REG 7V IN 3-3 DC. 003-6
SYS 12V IN 3-4 DC. 003-5
SYS 12V IN 3-5 DC. 003-4
SYS GND 3-6 DC. 003-3
SYS GND 3-7 DC. 003-2
KY MICON STAND BY 20-8 KY. 703-1
L:RESET OUT 7-10 SV. 406-3
L:RESET OUT 20-3 KY. 703-6
L:RESET OUT (B) 2/2
L:AUDIO PB MUTEOUT 4-2 VA. 102-2
H:VIDEO MUTE OUT 4-3 VA. 102-1
L:RESET OUT (A) 2/2
6.00MHZ OUT 2/2
CTL MUTING IN 2/2
T-LINE OUT 2/2
M2 READY IN 2/2
SERIAL CLK OUT 2/2
M1 DATA OUT 2/2
M2 DATA IN 2/2
T REEL FG IN 2/2

SY-51 (1/2)

1-618-605-11
VP-5020
VP-5040

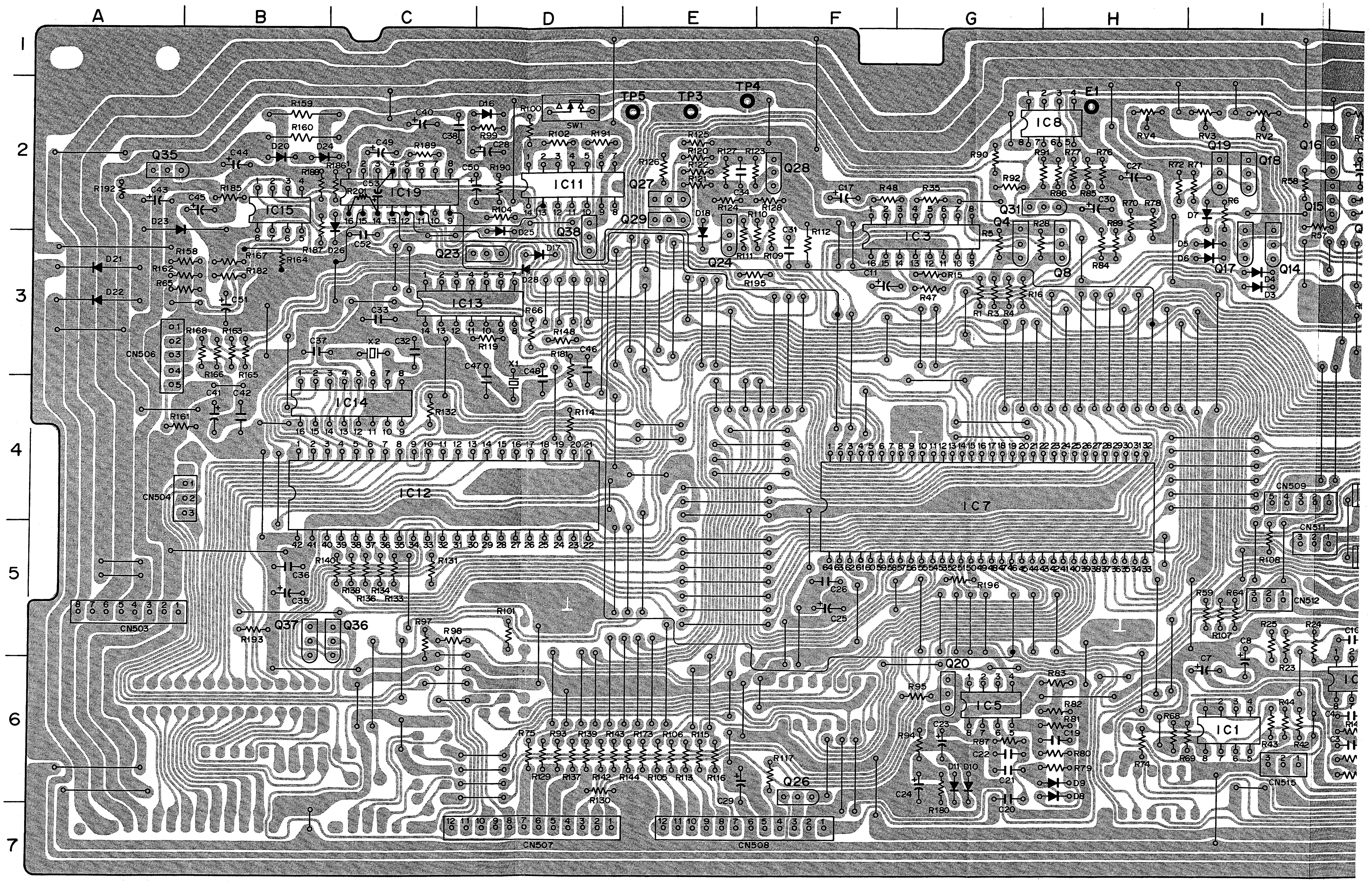
NOTE:

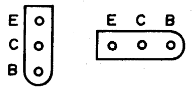
The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

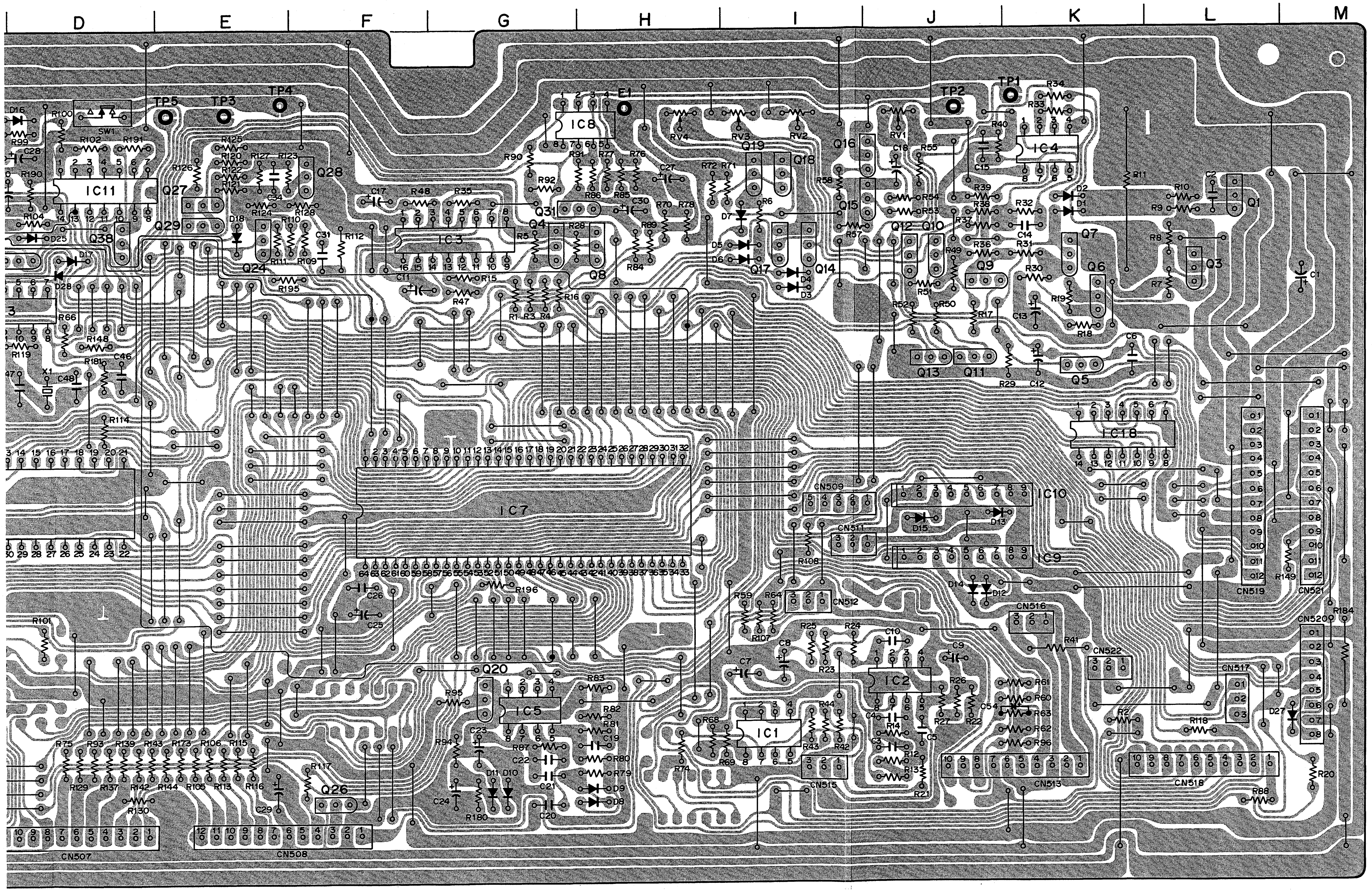
SY-51; SYSTEM CONTROL

CN503	A - 5
CN504	B - 4
CN506	A - 3
CN507	D - 7
CN508	F - 7
CN509	I - 4
CN511	I - 5
CN512	I - 5
CN513	K - 6
CN515	I - 6
CN516	K - 5
CN517	L - 6
CN518	L - 6
CN519	L - 4
CN520	M - 6
CN521	M - 4
CN522	K - 6
D1	K - 2
D2	K - 2
D3	I - 3
D4	I - 3
D5	I - 3
D6	I - 3
D7	I - 2
D8	H - 6
D9	H - 6
D10	G - 6
D11	G - 6
D12	J - 5
D13	J - 4
D14	J - 5
D15	J - 4
D16	D - 2
D17	D - 3
D18	E - 2
D20	B - 2
D21	A - 3
D22	A - 3
D23	A - 2
D24	B - 2
D25	D - 2
D26	C - 2
D27	M - 6
D28	D - 3
E1	H - 2
IC1	I - 6
IC2	J - 6
IC3	G - 2
IC4	K - 2
IC5	G - 6
IC7	G - 4
IC8	H - 2
IC9	J - 5
IC10	J - 4
IC11	D - 2
IC12	C - 4
IC13	C - 3
IC14	C - 4
IC15	B - 2
IC18	K - 4
IC19	C - 2

Q1	L - 2
Q3	L - 3
Q4	G - 2
Q5	K - 3
Q6	K - 3
Q7	K - 3
Q8	H - 3
Q9	J - 3
Q10	J - 3
Q11	J - 3
Q12	J - 3
Q13	J - 3
Q14	J - 3
Q15	J - 2
Q16	J - 2
Q17	I - 3
Q18	I - 2
Q19	I - 2
Q20	G - 6
Q23	D - 3
Q24	E - 2
Q26	F - 6
Q27	E - 2
Q28	F - 2
Q29	E - 2
Q31	G - 2
Q35	A - 2
Q36	C - 5
Q37	B - 5
Q38	D - 2
RV1	J - 2
RV2	I - 2
RV3	I - 2
RV4	H - 2
SW1	D - 2
TP1	K - 2
TP2	J - 2
TP3	E - 2
TP4	E - 2
TP5	E - 2
X1	D - 3
X2	C - 3


A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
IC1
IC3
IC5
IC7
IC8
IC11
IC12
IC13
IC14
IC15
IC19
CN503
CN504
CN506
CN507
CN508
CN509
CN511
CN512
CN515
SW1
TP3
TP4
TP5
E1




D
E
F
G
H
I
J
K
L
M
TP1
TP2
TP3
TP4
TP5
E1
SW1
IC1
IC2
IC3
IC4
IC5
IC7
IC8
IC9
IC10
IC11
IC18
Q1
Q3
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q24
Q26
Q27
Q28
Q29
Q31
Q38
X1
RV1
RV2
RV3
RV4
CN507
CN508
CN509
CN511
CN512
CN513
CN515
CN516
CN517
CN518
CN519
CN520
CN521
CN522

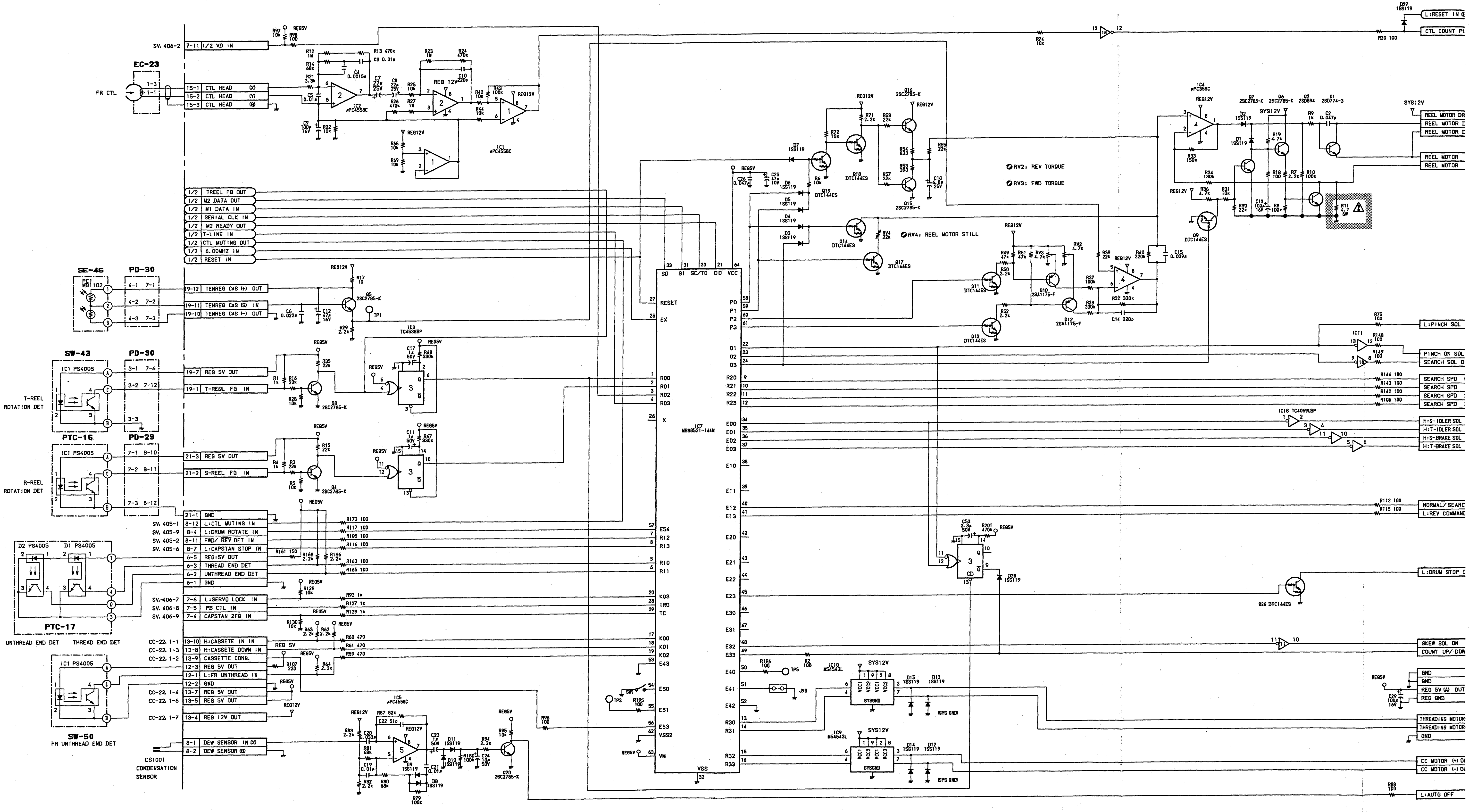
SY-51 —SOLDERING SIDE—

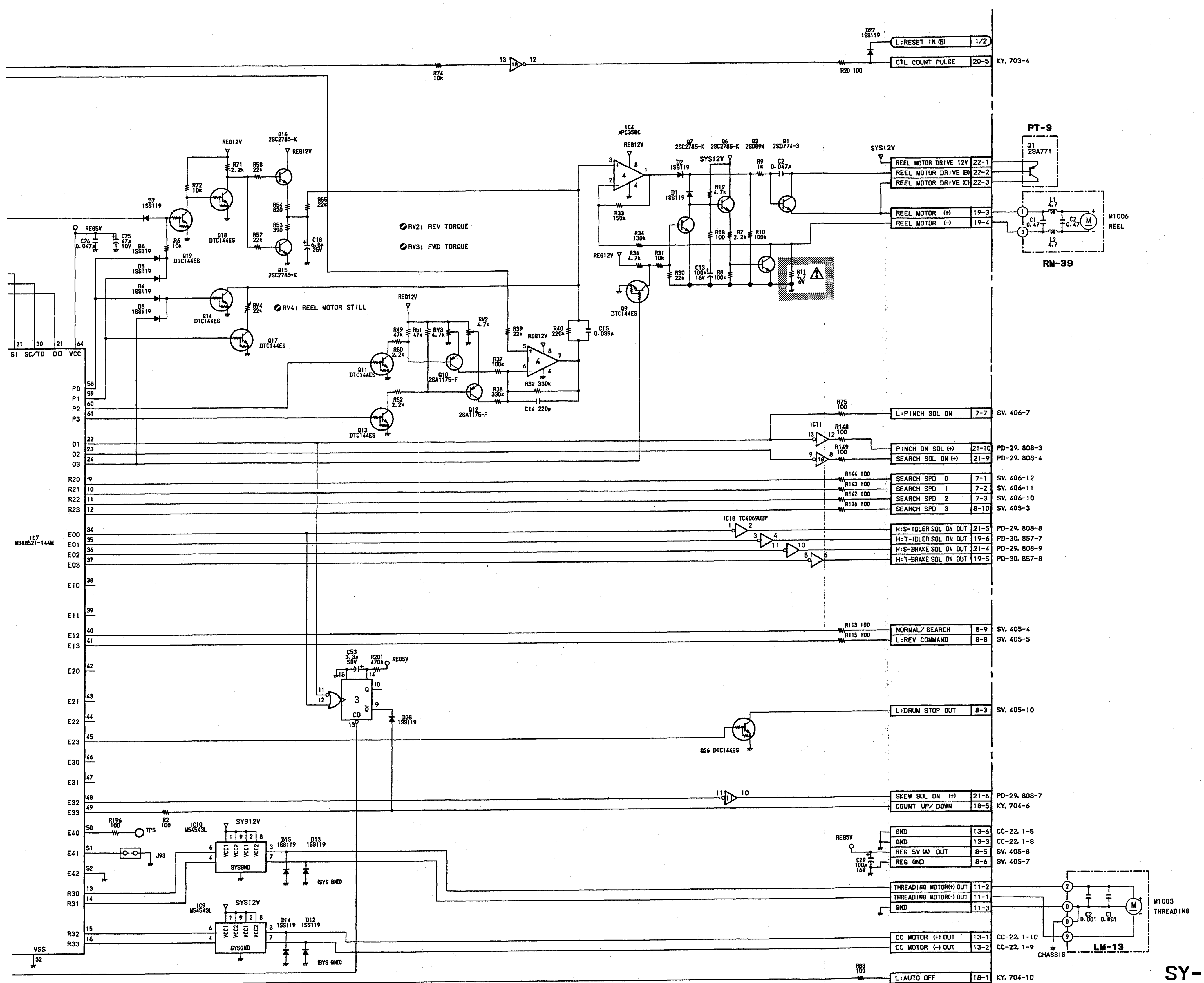
1-618-605-11

VP-5020

VP-5040

SY-51 (2/2); SYSTEM CONTROL


EC-23
FR CTL
SV. 406-2
7-11 1/2 VD IN
15-1 CTL HEAD
15-2 CTL HEAD
15-3 CTL HEAD
IC2 μPC4558C
IC1 μPC4558C
1/2 TREEL FG OUT
1/2 M2 DATA OUT
1/2 M1 DATA IN
1/2 SERIAL CLK IN
1/2 M2 READY OUT
1/2 T-LINE IN
1/2 CTL MUTING OUT
1/2 6.00MHZ IN
1/2 RESET IN
SE-46
PD-30
19-12 TENREG C⊘S (+) OUT
19-11 TENREG C⊘S (S) IN
19-10 TENREG C⊘S (-) OUT
SW-43
IC1 PS4005
T-REEL ROTATION DET
19-7 REG 5V OUT
19-1 T-REGL FG IN
IC3 TC4538BP
PTC-16
PD-29
R-REEL ROTATION DET
21-3 REG 5V OUT
21-2 S-REEL FG IN
21-1 GND
8-12 L:CTL MUTING IN
8-4 L:DRUM ROTATE IN
8-11 FWD/ REV DET IN
8-7 L:CAPSTAN STOP IN
6-5 REG+5V OUT
6-3 THREAD END DET
6-2 UNTHREAD END DET
6-1 GND
7-6 L:SERVO LOCK IN
7-5 PB CTL IN
7-4 CAPSTAN 2FG IN
D2 PS4005
D1 PS4005
PTC-17
UNTHREAD END DET
THREAD END DET
13-10 H:CASSETE IN IN
13-8 H:CASSETE DOWN IN
13-9 CASSETTE CONN.
12-3 REG 5V OUT
12-1 L:FR UNTHREAD IN
12-2 GND
13-7 REG 5V OUT
13-5 REG 5V OUT
13-4 REG 12V OUT
SW-50
FR UNTHREAD END DET
8-1 DEW SENSOR IN
8-2 DEW SENSOR
CS1001 CONDENSATION SENSOR
IC5 μPC4558C
IC7 MB88521-144M
RESET
EX
X
VSS
VSS2
VM
IC10 M54543L
IC9 M54543L
SYS12V
SYS GND
RV2: REV TORQUE
RV3: FWD TORQUE
RV4: REEL MOTOR STILL
IC4 μPC358C
IC11
IC18 TC4069UBP
L:RESET IN
CTL COUNT PU
REEL MOTOR DR
REEL MOTOR
L:PINCH SOL
PINCH ON SOL
SEARCH SOL
SEARCH SPD
H:S-IDLER SOL
H:T-IDLER SOL
H:S-BRAKE SOL
H:T-BRAKE SOL
NORMAL/ SEARC
L:REV COMMAND
L:DRUM STOP
Q26 DTC144ES
SKEW SOL ON
COUNT UP/ DOW
GND
REG 5V (A) OUT
REG GND
THREADING MOTOR
CC MOTOR (+)
CC MOTOR (-)
L:AUTO OFF


IC7 MB88521-144M
SI SC/TO OO VCC
P0 P1 P2 P3
O1 O2 O3
R20 R21 R22 R23
E00 E01 E02 E03 E10 E11 E12 E13 E20 E21 E22 E23 E30 E31 E32 E33 E40 E41 E42
R30 R31 R32 R33
VSS
IC4 μPC358C
Q16 2SC2785-K
Q14 DTC144ES
Q17 DTC144ES
Q18 DTC144ES
Q19 DTC144ES
Q15 2SC2785-K
Q11 DTC144ES
Q13 DTC144ES
Q10 2SA1175-F
Q12 2SA1175-F
Q9 DTC144ES
Q7 2SC2785-K
Q6 2SC2785-K
Q3 2SD894
Q1 2SD774-3
Q26 DTC144ES
RV2: REV TORQUE
RV3: FWD TORQUE
RV4: REEL MOTOR STILL
REG12V
REG5V
SYS12V
R11 4.7 6W ⚠
IC18 TC4069UBP
IC11
IC10 M54543L
IC9 M54543L
SYSGND
SYS GND
TP5
J93
L:RESET IN (B) 1/2
CTL COUNT PULSE 20-5 KY. 703-4
REEL MOTOR DRIVE 12V 22-1
REEL MOTOR DRIVE (B) 22-2
REEL MOTOR DRIVE (C) 22-3
REEL MOTOR (+) 19-3
REEL MOTOR (-) 19-4
PT-9
Q1 2SA771
M1006 REEL
RM-39
L:PINCH SOL ON 7-7 SV. 406-7
PINCH ON SOL (+) 21-10 PD-29. 808-3
SEARCH SOL ON (+) 21-9 PD-29. 808-4
SEARCH SPD 0 7-1 SV. 406-12
SEARCH SPD 1 7-2 SV. 406-11
SEARCH SPD 2 7-3 SV. 406-10
SEARCH SPD 3 8-10 SV. 405-3
H:S-IDLER SOL ON OUT 21-5 PD-29. 808-8
H:T-IDLER SOL ON OUT 19-6 PD-30. 857-7
H:S-BRAKE SOL ON OUT 21-4 PD-29. 808-9
H:T-BRAKE SOL ON OUT 19-5 PD-30. 857-8
NORMAL/ SEARCH 8-9 SV. 405-4
L:REV COMMAND 8-8 SV. 405-5
L:DRUM STOP OUT 8-3 SV. 405-10
SKEW SOL ON (+) 21-6 PD-29. 808-7
COUNT UP/ DOWN 18-5 KY. 704-6
GND 13-6 CC-22. 1-5
GND 13-3 CC-22. 1-8
REG 5V (A) OUT 8-5 SV. 405-8
REG GND 8-6 SV. 405-7
THREADING MOTOR(+) OUT 11-2
THREADING MOTOR(-) OUT 11-1
GND 11-3
CC MOTOR (+) OUT 13-1 CC-22. 1-10
CC MOTOR (-) OUT 13-2 CC-22. 1-9
CHASSIS
LM-13
M1003 THREADING
L:AUTO OFF 18-1 KY. 704-10

Ref. NO.	TYPE	REG12V	REG5V	SYS12V	REG 5V (SP)	GND
IC1	UPC4558C	8				4
IC2	UPC4558C	8				4
IC3	TC4538BP		3, 5 11, 13			1 15
IC4	UPC358C	8				4
IC5	UPC4558C	8				4
IC6	—					
IC7	MB88521 -144M		6364			52,53 62,32
IC8	NJM2903D	8			4	
IC9	M54543L			1 ,2 8 ,9		
IC10	M54543L			1 ,2 8 ,9		
IC11	TC4069UBP					
IC12	MB88505 -442M		42			21 41
IC13	TC40H000P					
IC14	MB882001 -17N		16			8 11 12
IC15	NJM2903D				8	4
IC16	—					
IC17	—					
IC18	TC4069UBP					
IC19	TC4538BP		3			1 4
IC20	—					

SW1
ON : TEST MODE
OFF : NORMAL MODE

J93	TP5	LONG PAUSE
0	1	8 MIN
1	1	1 MIN
1	0	10 SEC
0	0	2 SEC

SY-51 (2/2)

1-618-605-11
VP-5020
VP-5040

NOTE:

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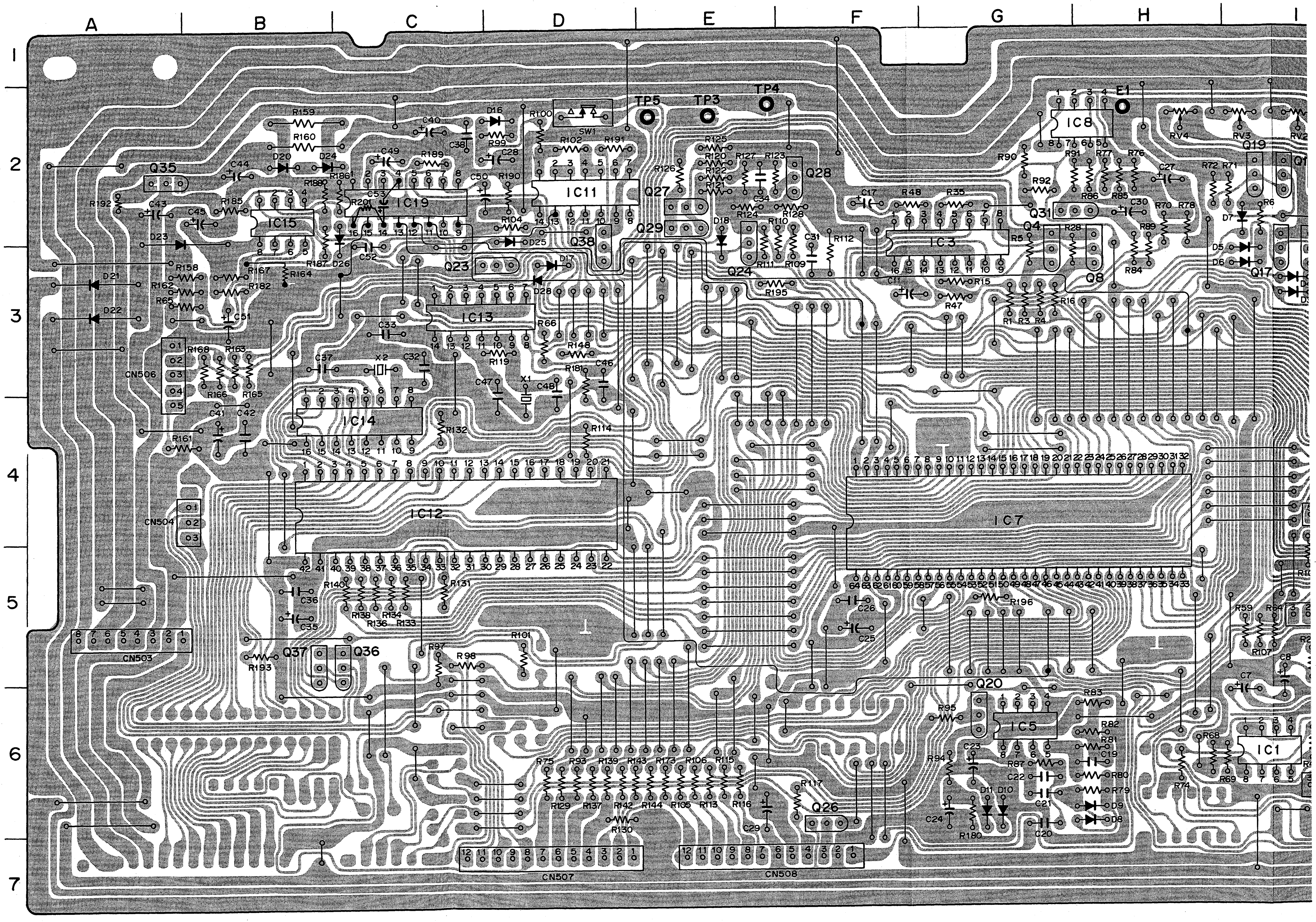
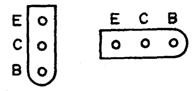
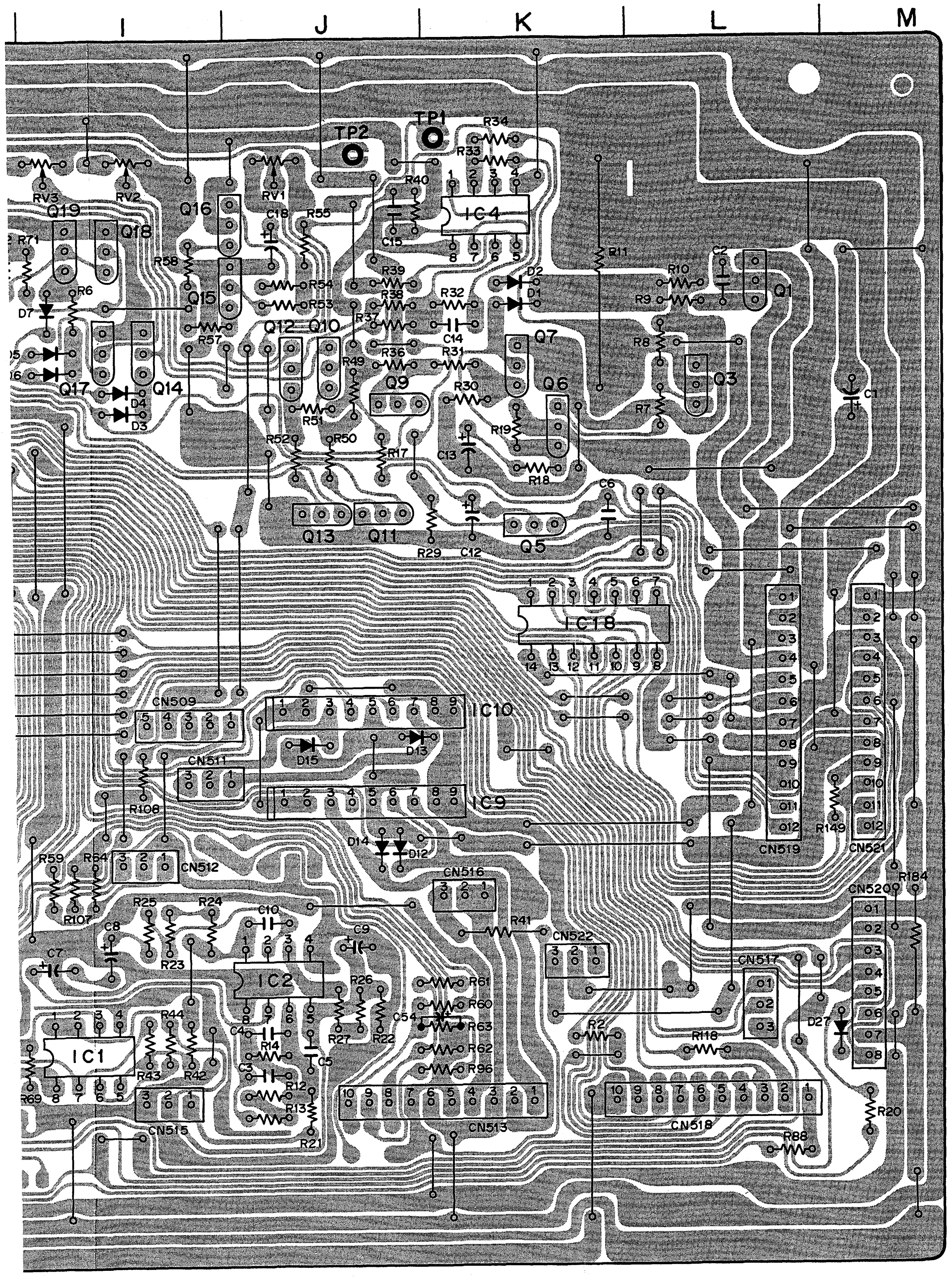
Replace only with same components as specified.

SY-51 ; SYSTEM CONTROL

CN503	A - 5
CN504	B - 4
CN506	A - 3
CN507	D - 7
CN508	F - 7
CN509	I - 4
CN511	I - 5
CN512	I - 5
CN513	K - 6
CN515	I - 6
CN516	K - 5
CN517	L - 6
CN518	L - 6
CN519	L - 4
CN520	M - 6
CN521	M - 4
CN522	K - 6
D1	K - 2
D2	K - 2
D3	I - 3
D4	I - 3
D5	I - 3
D6	I - 3
D7	I - 2
D8	H - 6
D9	H - 6
D10	G - 6
D11	G - 6
D12	J - 5
D13	J - 4
D14	J - 5
D15	J - 4
D16	D - 2
D17	D - 3
D18	E - 2
D20	B - 2
D21	A - 3
D22	A - 3
D23	A - 2
D24	B - 2
D25	D - 2
D26	C - 2
D27	M - 6
D28	D - 3
E1	H - 2
IC1	I - 6
IC2	J - 6
IC3	G - 2
IC4	K - 2
IC5	G - 6
IC7	G - 4
IC8	H - 2
IC9	J - 5
IC10	J - 4
IC11	D - 2
IC12	C - 4
IC13	C - 3
IC14	C - 4
IC15	B - 2
IC18	K - 4
IC19	C - 2
Q1	L - 2
Q3	L - 3
Q4	G - 2
Q5	K - 3
Q6	K - 3
Q7	K - 3
Q8	H - 3
Q9	J - 3
Q10	J - 3
Q11	J - 3
Q12	J - 3
Q13	J - 3
Q14	J - 3
Q15	J - 2
Q16	J - 2
Q17	I - 3
Q18	I - 2
Q19	I - 2
Q20	G - 6
Q23	D - 3
Q24	E - 2
Q26	F - 6
Q27	E - 2
Q28	F - 2
Q29	E - 2
Q31	G - 2
Q35	A - 2
Q36	C - 5
Q37	B - 5
Q38	D - 2
RV1	J - 2
RV2	I - 2
RV3	I - 2
RV4	H - 2
SW1	D - 2
TP1	K - 2
TP2	J - 2
TP3	E - 2
TP4	E - 2
TP5	E - 2
X1	D - 3
X2	C - 3


A
B
C
D
E
F
G
H
I
1
2
3
4
5
6
7
IC3
IC5
IC7
IC8
IC11
IC12
IC13
IC14
IC15
IC19
IC1
Q4
Q8
Q17
Q19
Q20
Q23
Q24
Q26
Q27
Q28
Q29
Q31
Q35
Q36
Q37
Q38
SW1
TP3
TP4
TP5
E1
X1
X2
CN503
CN504
CN506
CN507
CN508
RV3
RV4

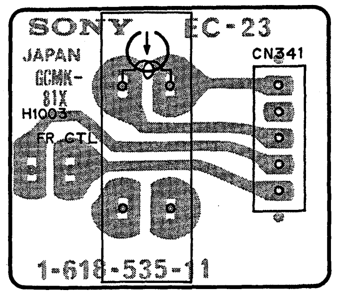



I
J
K
L
M
TP1
TP2
RV1
RV2
RV3
Q1
Q3
Q5
Q6
Q7
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
IC1
IC2
IC4
IC9
IC10
IC18
CN509
CN511
CN512
CN513
CN515
CN516
CN517
CN518
CN519
CN520
CN521
CN522
D1
D2
D3
D4
D7
D12
D13
D14
D15
D27
C1
C2
C5
C6
C7
C8
C9
C10
C12
C13
C14
C15
C18
C54
R2
R6
R7
R8
R9
R10
R11
R12
R13
R14
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
R27
R29
R30
R31
R32
R33
R34
R36
R37
R39
R40
R41
R42
R43
R44
R49
R50
R51
R52
R53
R54
R55
R57
R58
R59
R60
R61
R62
R63
R64
R69
R71
R88
R96
R101
R108
R118
R149
R184

SY-51 — SOLDERING SIDE —

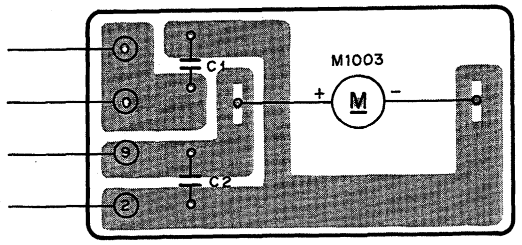
1-618-605-11
VP-5020
VP-5040

EC-23; FR CTL HEAD
LM-13; THREADING MOTOR
PT-9; REEL MOTOR DRIVER
PTC-17; THREADING DET.
SW-50; FR UNTHREAD END DET.


SONY
EC-23
JAPAN
GCMK-81X
H1003
FR CTL
CN341
1-618-535-11

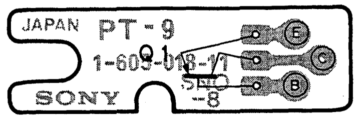
EC-23 — SOLDERING SIDE —

1-618-535-11
VP-5020
VP-5040


C1
C2
M1003
M
+
−

LM-13 — SOLDERING SIDE —

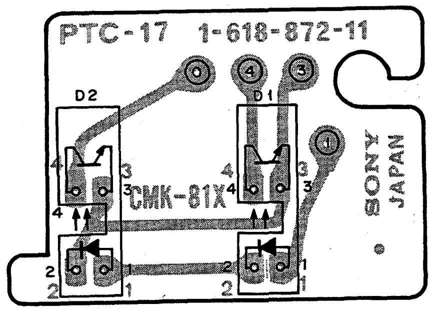
1-618-600-11
VP-5020
VP-5040


JAPAN
PT-9
Q1
1-605-018-11
SONY
E
C
B

PT-9

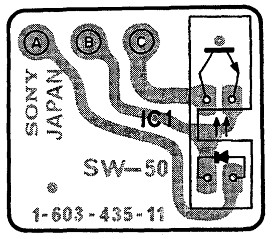
— SOLDERING SIDE —

1-605-018-11
VP-5020
VP-5040


PTC-17 1-618-872-11
D2
D1
CMK-81X
SONY
JAPAN

PTC-17 — SOLDERING SIDE —

1-618-872-11
VP-5020
VP-5040

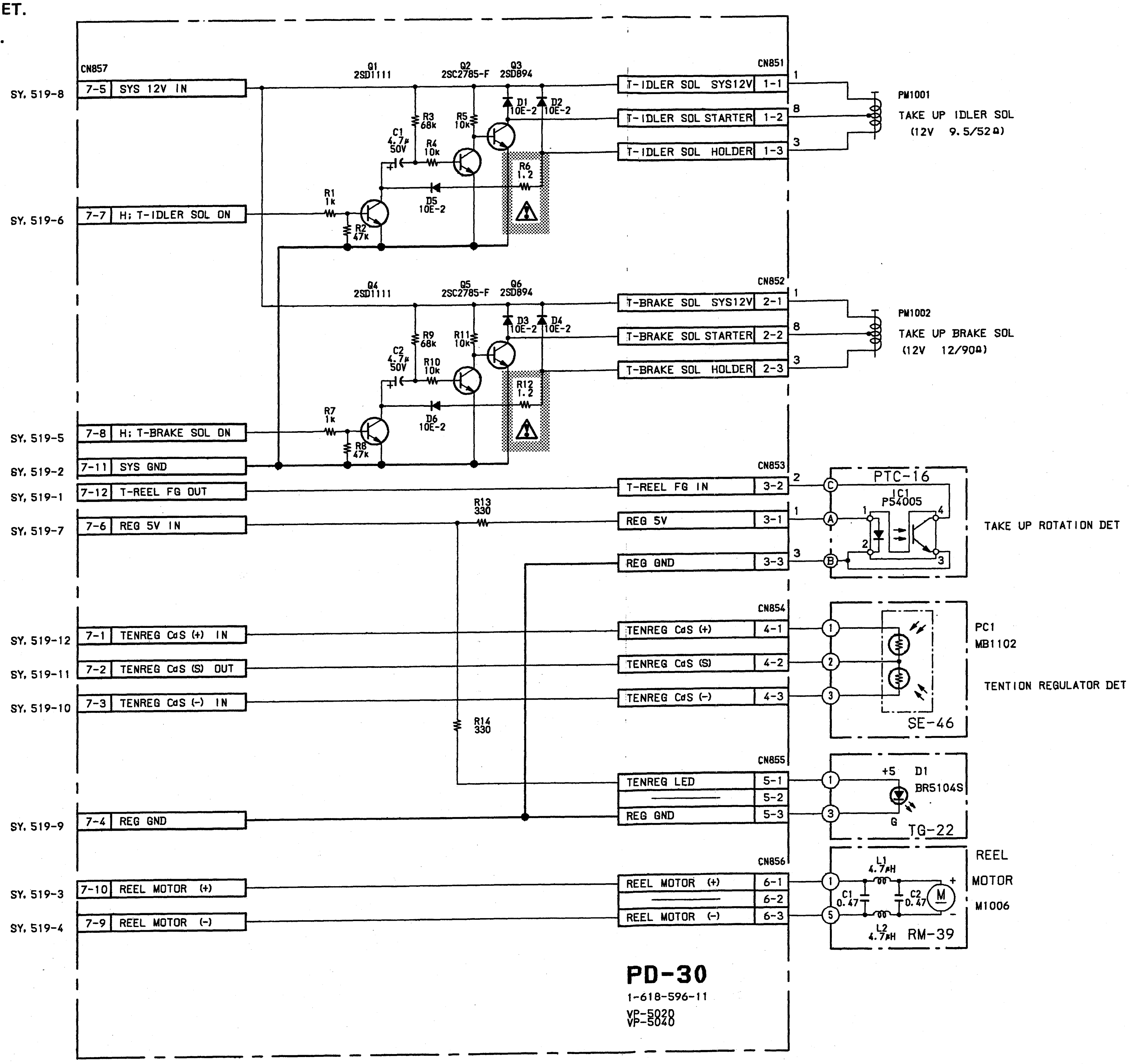

A
B
C
SONY
JAPAN
IC1
SW-50
1-603-435-11

SW-50

— SOLDERING SIDE —

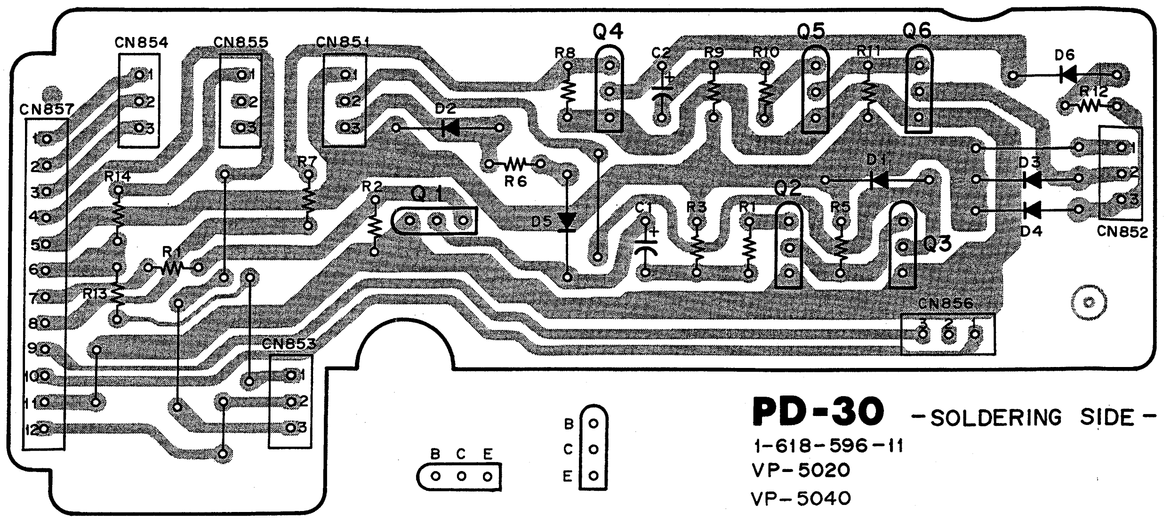
1-603-435-11
VP-5020
VP-5040

PD-30; PLUNGER SOLENOID
RM-39; REEL MOTOR
SE-46; TENSION REGULATOR
PTC-16; TAKE UP ROTATION DET.
TG-22; LED FOR TENSION REG.

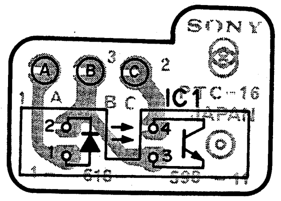

CN857
SY, 519-8
7-5 SYS 12V IN
SY, 519-6
7-7 H; T-IDLER SOL ON
SY, 519-5
7-8 H; T-BRAKE SOL ON
SY, 519-2
7-11 SYS GND
SY, 519-1
7-12 T-REEL FG OUT
SY, 519-7
7-6 REG 5V IN
SY, 519-12
7-1 TENREG CdS (+) IN
SY, 519-11
7-2 TENREG CdS (S) OUT
SY, 519-10
7-3 TENREG CdS (-) IN
SY, 519-9
7-4 REG GND
SY, 519-3
7-10 REEL MOTOR (+)
SY, 519-4
7-9 REEL MOTOR (-)
Q1 2SD1111
Q2 2SC2785-F
Q3 2SD894
D1 10E-2
D2 10E-2
R3 68k
R5 10k
C1 4.7μ 50V
R4 10k
R6 1.2
D5 10E-2
R1 1k
R2 47k
Q4 2SD1111
Q5 2SC2785-F
Q6 2SD894
D3 10E-2
D4 10E-2
R9 68k
R11 10k
C2 4.7μ 50V
R10 10k
R12 1.2
D6 10E-2
R7 1k
R8 47k
R13 330
R14 330
CN851
T-IDLER SOL SYS12V 1-1
T-IDLER SOL STARTER 1-2
T-IDLER SOL HOLDER 1-3
1
8
3
PM1001
TAKE UP IDLER SOL
(12V 9.5/52Ω)
CN852
T-BRAKE SOL SYS12V 2-1
T-BRAKE SOL STARTER 2-2
T-BRAKE SOL HOLDER 2-3
PM1002
TAKE UP BRAKE SOL
(12V 12/90Ω)
CN853
T-REEL FG IN 3-2
REG 5V 3-1
REG GND 3-3
2
1
3
PTC-16
IC1 P54005
C
A
B
4
TAKE UP ROTATION DET
CN854
TENREG CdS (+) 4-1
TENREG CdS (S) 4-2
TENREG CdS (-) 4-3
PC1
MB1102
TENTION REGULATOR DET
SE-46
CN855
TENREG LED 5-1
5-2
REG GND 5-3
+5 D1
BR5104S
G
TG-22
CN856
REEL MOTOR (+) 6-1
6-2
REEL MOTOR (-) 6-3
L1 4.7μH
C1 0.47
C2 0.47
M
L2 4.7μH
RM-39
REEL
MOTOR
M1006
5
PD-30
1-618-596-11
VP-5020
VP-5040

NOTE:

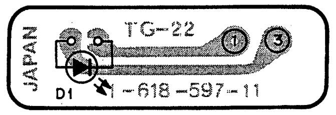
The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.


CN854
CN855
CN851
Q4
Q5
Q6
R8
C2
R9
R10
R11
D6
R12
CN857
D2
R6
D1
D3
D4
CN852
R14
R7
R2
Q1
D5
C1
R3
R1
Q2
R5
Q3
R13
CN856
CN853
B C E
B
C
E

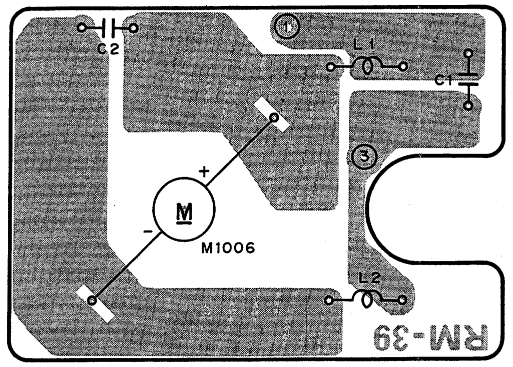
PD-30 -SOLDERING SIDE-
1-618-596-11
VP-5020
VP-5040


SONY
A
B
C
IC1
PTC-16
JAPAN
618
598
11

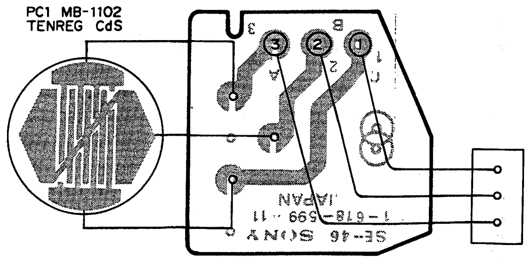
PTC-16
-SOLDERING SIDE-
1-618-598-11,12
VP-5020
VP-5040


JAPAN
TG-22
D1
1-618-597-11

TG-22
-SOLDERING SIDE-
1-618-597-11,12
VP-5020
VP-5040


C2
L1
C1
+
-
M
M1006
L2
RM-39

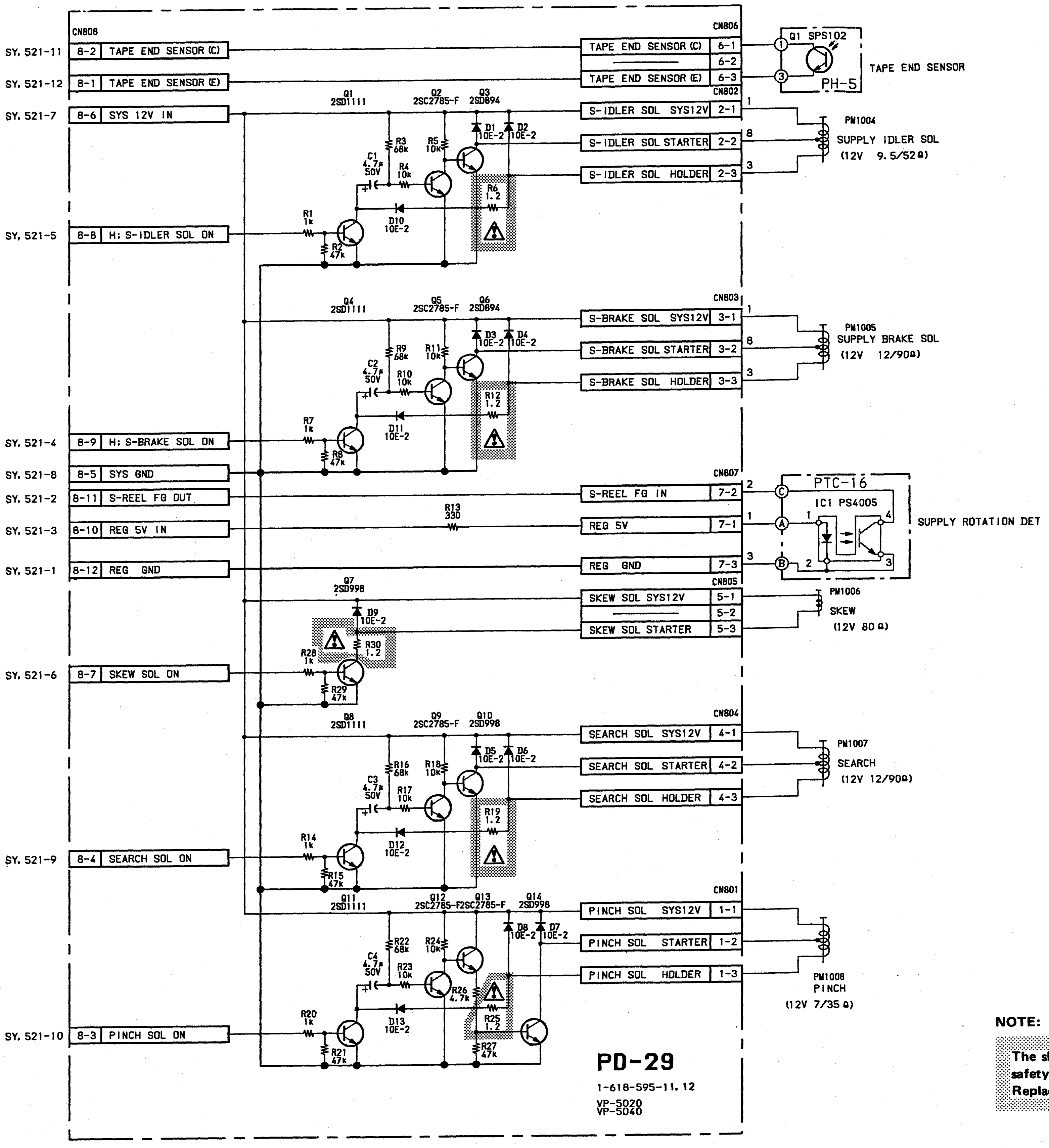
RM-39 -SOLDERING SIDE-
1-618-873-11
VP-5020
VP-5040

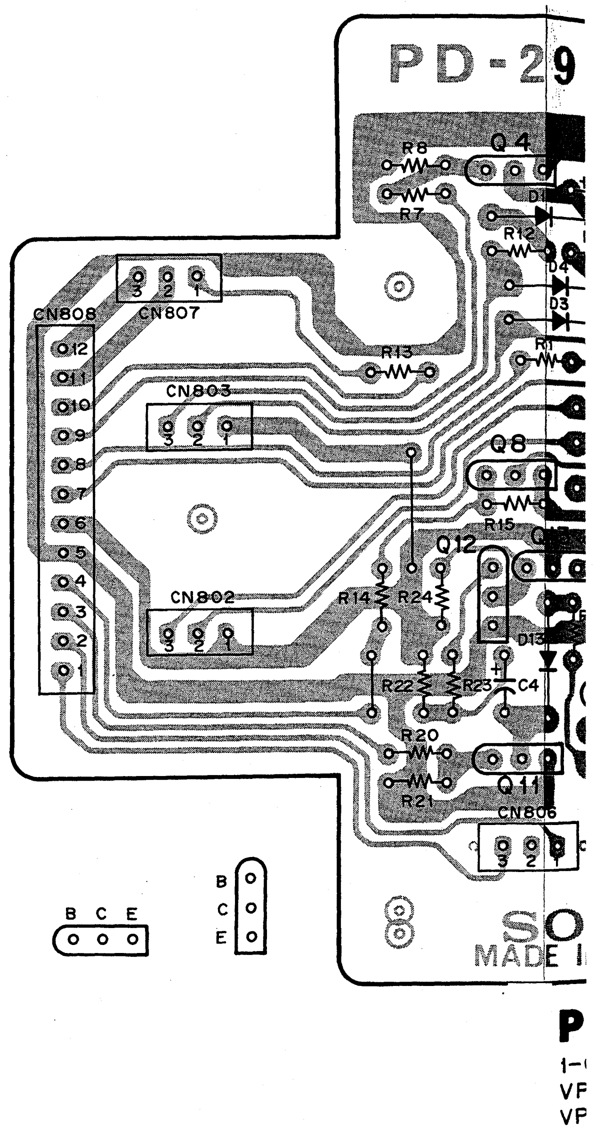

PC1 MB-1102
TENREG CdS
③
②
①
A
B
SONY SE-46
1-618-599-11
JAPAN

SE-46
-SOLDERING SIDE-
1-618-599-11,12
VP-5020
VP-5040

to

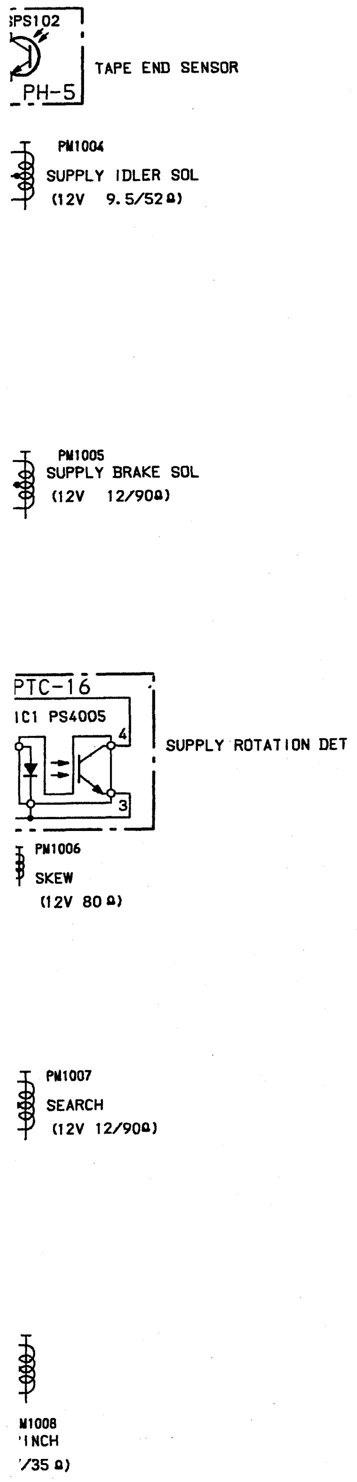
PD-29; PLUNGER SOLENOID
PH-5; TAPE SENSOR
PTC-16; SUPPLY ROTATION DET.

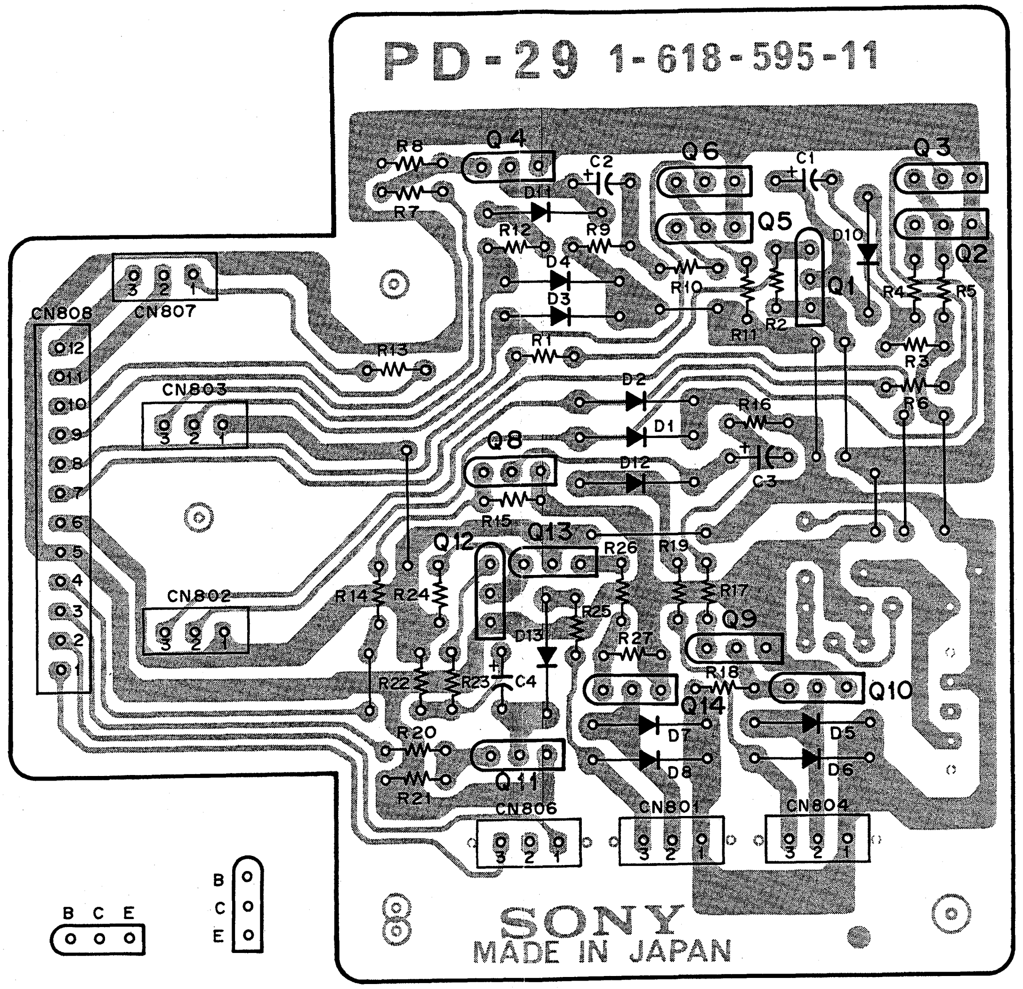

CN808
SY, 521-11 8-2 TAPE END SENSOR (C)
SY, 521-12 8-1 TAPE END SENSOR (E)
SY, 521-7 8-6 SYS 12V IN
SY, 521-5 8-8 H: S-IDLER SOL ON
SY, 521-4 8-9 H: S-BRAKE SOL ON
SY, 521-8 8-5 SYS GND
SY, 521-2 8-11 S-REEL FG OUT
SY, 521-3 8-10 REG 5V IN
SY, 521-1 8-12 REG GND
SY, 521-6 8-7 SKEW SOL ON
SY, 521-9 8-4 SEARCH SOL ON
SY, 521-10 8-3 PINCH SOL ON
CN806
TAPE END SENSOR (C) 6-1
6-2
TAPE END SENSOR (E) 6-3
Q1 SPS102
PH-5
TAPE END SENSOR
CN802
S-IDLER SOL SYS12V 2-1
S-IDLER SOL STARTER 2-2
S-IDLER SOL HOLDER 2-3
PM1004
SUPPLY IDLER SOL
(12V 9.5/52Ω)
Q1 2SD1111
Q2 2SC2785-F
Q3 2SD894
D1 10E-2
D2 10E-2
R3 68k
R5 10k
C1 4.7µ 50V
R4 10k
R6 1.2
D10 10E-2
R1 1k
R2 47k
CN803
S-BRAKE SOL SYS12V 3-1
S-BRAKE SOL STARTER 3-2
S-BRAKE SOL HOLDER 3-3
PM1005
SUPPLY BRAKE SOL
(12V 12/90Ω)
Q4 2SD1111
Q5 2SC2785-F
Q6 2SD894
D3 10E-2
D4 10E-2
R9 68k
R11 10k
C2 4.7µ 50V
R10 10k
R12 1.2
D11 10E-2
R7 1k
R8 47k
CN807
S-REEL FG IN 7-2
REG 5V 7-1
REG GND 7-3
R13 330
PTC-16
IC1 PS4005
SUPPLY ROTATION DET
CN805
SKEW SOL SYS12V 5-1
5-2
SKEW SOL STARTER 5-3
PM1006
SKEW
(12V 80Ω)
Q7 2SD998
D9 10E-2
R30 1.2
R28 1k
R29 47k
CN804
SEARCH SOL SYS12V 4-1
SEARCH SOL STARTER 4-2
SEARCH SOL HOLDER 4-3
PM1007
SEARCH
(12V 12/90Ω)
Q8 2SD1111
Q9 2SC2785-F
Q10 2SD998
D5 10E-2
D6 10E-2
R16 68k
R18 10k
C3 4.7µ 50V
R17 10k
R19 1.2
D12 10E-2
R14 1k
R15 47k
CN801
PINCH SOL SYS12V 1-1
PINCH SOL STARTER 1-2
PINCH SOL HOLDER 1-3
PM1008
PINCH
(12V 7/35Ω)
Q11 2SD1111
Q12 2SC2785-F
Q13 2SC2785-F
Q14 2SD998
D8 10E-2
D7 10E-2
R22 68k
R24 10k
C4 4.7µ 50V
R23 10k
R26 4.7k
R25 1.2
R27 47k
D13 10E-2
R20 1k
R21 47k
PD-29
1-618-595-11, 12
VP-5020
VP-5040


PD-29
Q4
R8
R7
R12
CN808
CN807
R13
CN803
R1
Q8
R15
Q12
CN802
R14
R24
D13
R22
R23
C4
R20
R21
Q11
CN806
B C E
B
C
E
MADE I
P
1-(
VF
VP

NOTE:

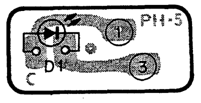
The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.


PS102
TAPE END SENSOR
PH-5
PM1004
SUPPLY IDLER SOL
(12V 9.5/52Ω)
PM1005
SUPPLY BRAKE SOL
(12V 12/90Ω)
PTC-16
IC1 PS4005
4
3
SUPPLY ROTATION DET
PM1006
SKEW
(12V 80Ω)
PM1007
SEARCH
(12V 12/90Ω)
M1008
'INCH
'/35 Ω


PD-29 1-618-595-11
Q4
Q6
Q3
Q5
Q2
Q1
Q8
Q13
Q12
Q9
Q10
Q14
Q11
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
R27
C1
C2
C3
C4
D1
D2
D3
D4
D5
D6
D7
D8
D10
D11
D12
D13
CN808
CN807
CN803
CN802
CN806
CN801
CN804
SONY
MADE IN JAPAN
B C E

PD-29 -SOLDERING SIDE-

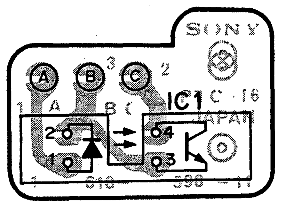
1-618-595-11,12
VP-5020
VP-5040



PH-5

-SOLDERING SIDE-

1-603-737-11
VP-5020
VP-5040


SONY
A
B
C
IC1
JAPAN
1-618-598-11

PTC-16

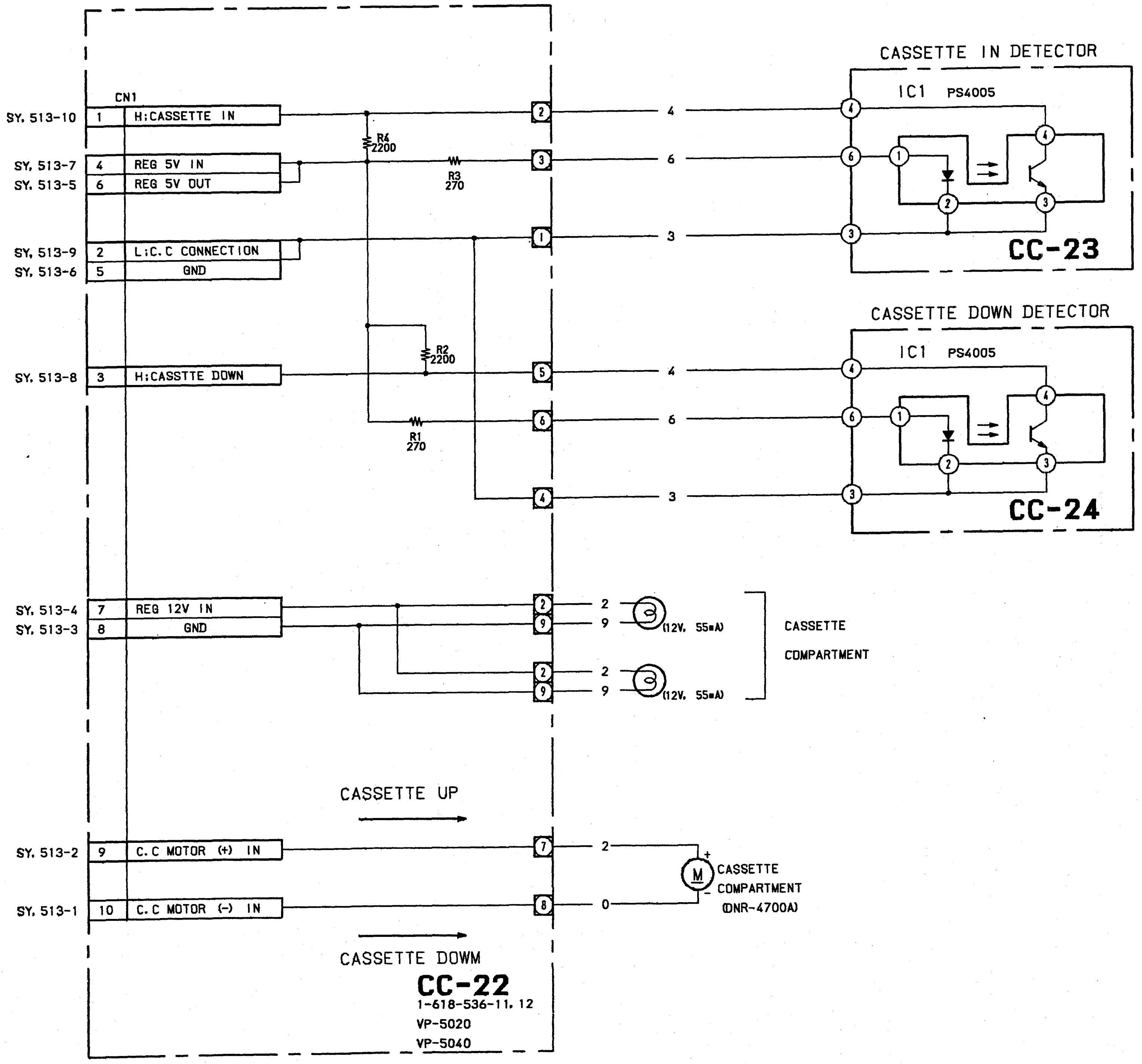
-SOLDERING SIDE-

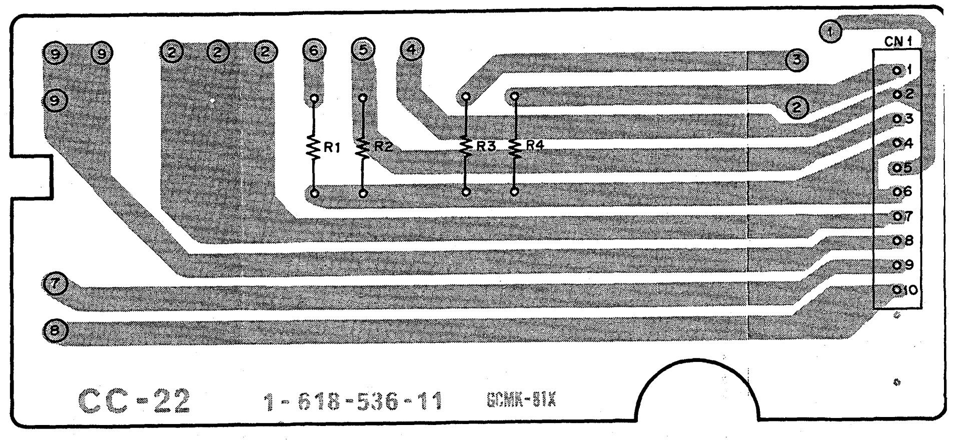
1-618-598-11,12
VP-5020
VP-5040

NOTE:

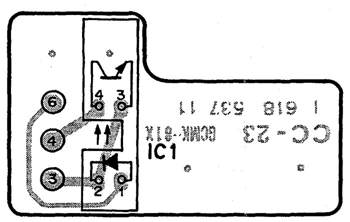
The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

CC-22 CC-23 CC-24) CASSETTE COMPARTMENT

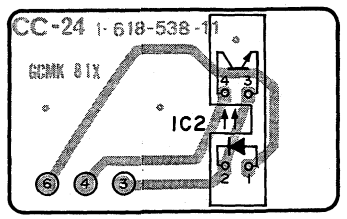

CN1
SY. 513-10
SY. 513-7
SY. 513-5
SY. 513-9
SY. 513-6
SY. 513-8
SY. 513-4
SY. 513-3
SY. 513-2
SY. 513-1
1 H:CASSETTE IN
4 REG 5V IN
6 REG 5V OUT
2 L:C.C CONNECTION
5 GND
3 H:CASSTTE DOWN
7 REG 12V IN
8 GND
9 C.C MOTOR (+) IN
10 C.C MOTOR (-) IN
R4 2200
R3 270
R2 2200
R1 270
CASSETTE IN DETECTOR
IC1 PS4005
CC-23
CASSETTE DOWN DETECTOR
IC1 PS4005
CC-24
(12V, 55mA)
(12V, 55mA)
CASSETTE COMPARTMENT
CASSETTE UP
M
CASSETTE COMPARTMENT (DNR-4700A)
CASSETTE DOWM
CC-22
1-618-536-11, 12
VP-5020
VP-5040


CN1
R1
R2
R3
R4
CC-22 1-618-536-11 GCMK-81X

CC-22 -SOLDERING SIDE-
1-618-536-11,12
VP-5020
VP-5040

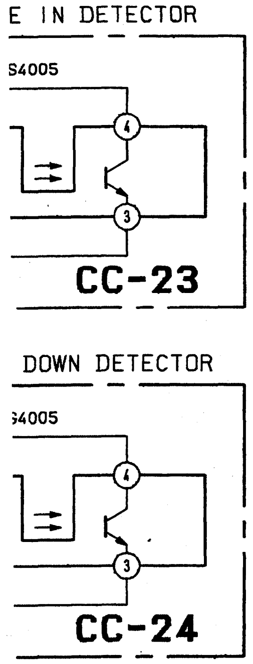

IC1
CC-23 GCMK-81X 1 618 537 11

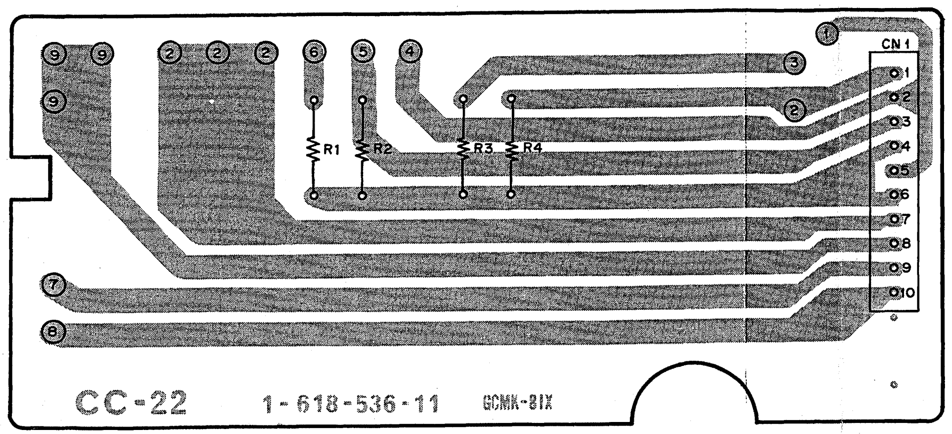
CC-23 -SOLDERING SIDE-
1-618-537-11
VP-5020
VP-5040


CC-24 1-618-538-11
GCMK 81X
IC2

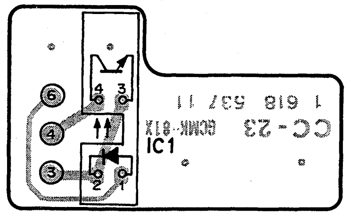
CC-24 -SOLDERING SIDE-
1-618-538-11
VP-5020
VP-5040

AC-65B; AC INPUT

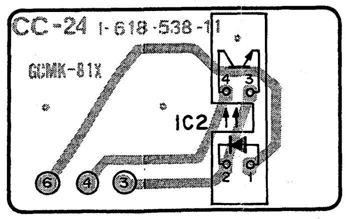

E IN DETECTOR
S4005
4
3
CC-23
DOWN DETECTOR
S4005
4
3
CC-24


CN1
1
2
3
4
5
6
7
8
9
10
R1
R2
R3
R4
CC-22 1-618-536-11 GCMK-81X

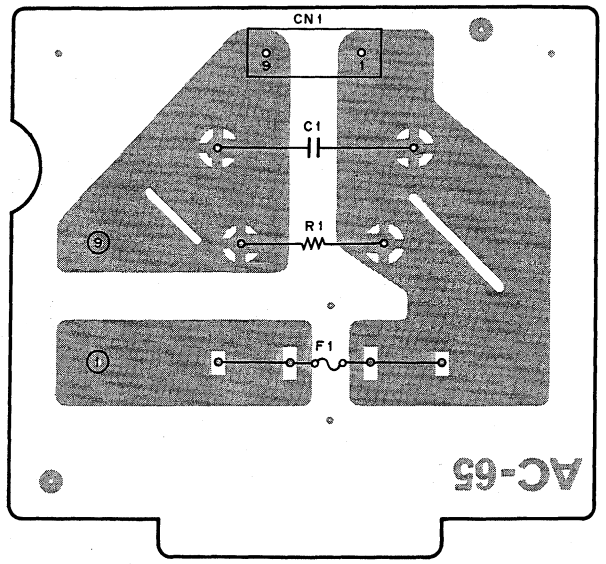
CC-22 -SOLDERING SIDE-
1-618-536-11,12
VP-5020
VP-5040


CC-23 1 618 537 11 GCMK-81X
IC1
4
3
2
1

CC-23 -SOLDERING SIDE-
1-618-537-11
VP-5020
VP-5040

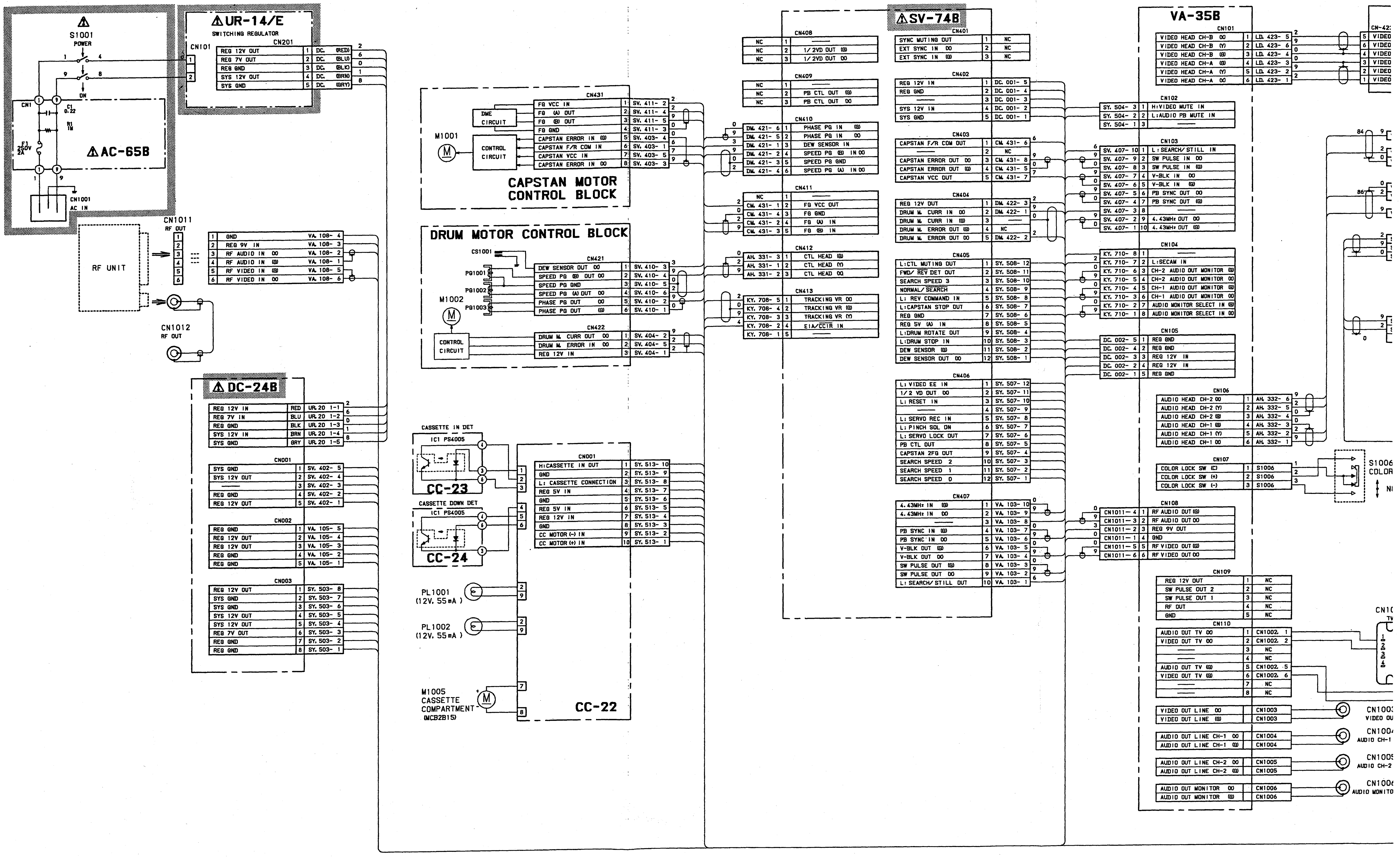

CC-24 1-618-538-11
GCMK-81X
IC2
4
3
2
1

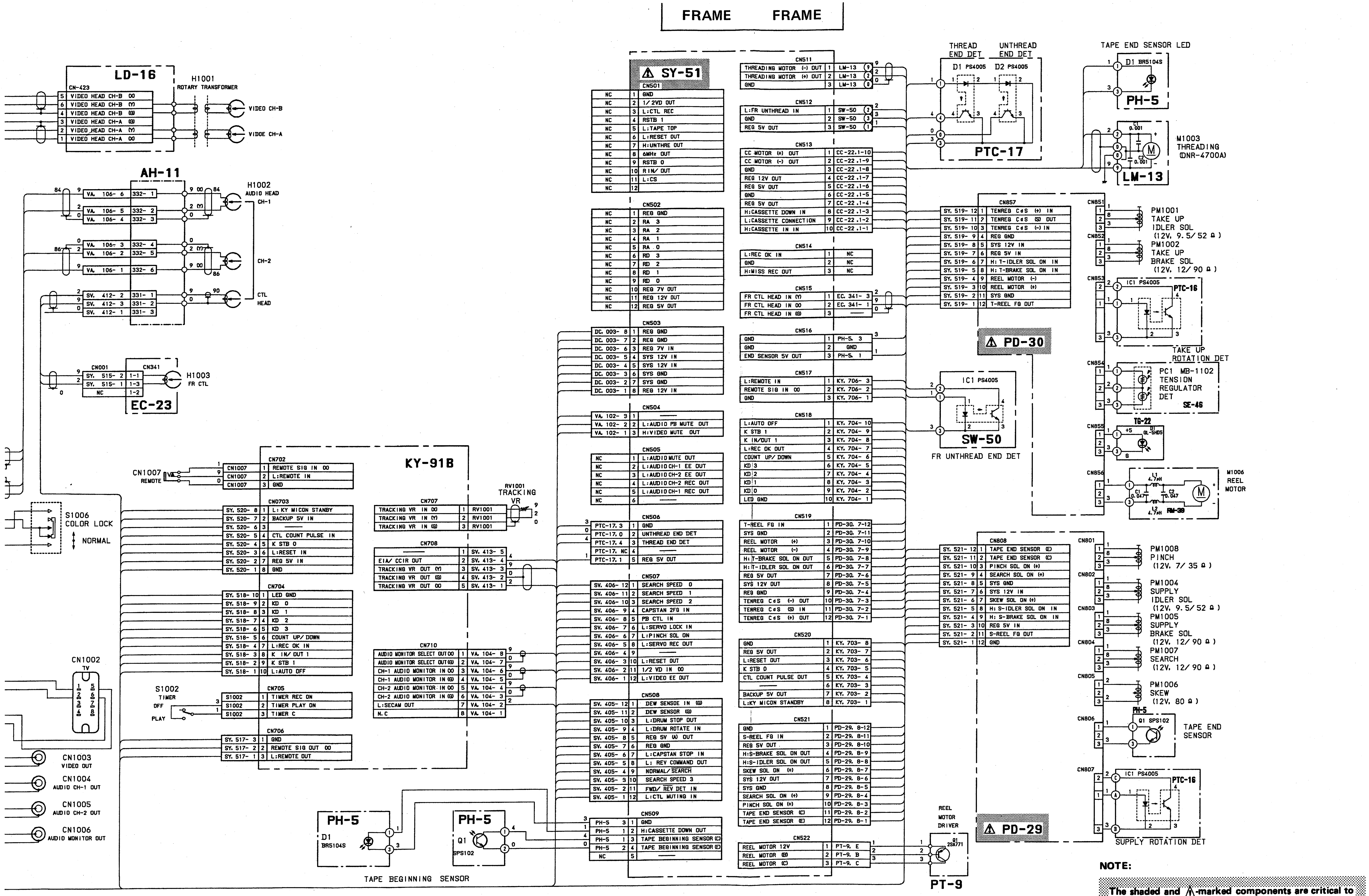
CC-24 -SOLDERING SIDE-
1-618-538-11
VP-5020
VP-5040


CN1
9
1
C1
R1
F1
AC-65

AC-65B -SOLDERING SIDE-
1-618-591-21,22
VP-5040

FRAME


S1001
POWER
AC-65B
CN1001
AC IN
UR-14/E
SWITCHING REGULATOR
CN101
CN201
REG 12V OUT
REG 7V OUT
REG GND
SYS 12V OUT
SYS GND
CN1011
RF OUT
RF UNIT
CN1012
RF OUT
DC-24B
CN001
CN002
CN003
CAPSTAN MOTOR CONTROL BLOCK
CN431
M1001
DME CIRCUIT
CONTROL CIRCUIT
DRUM MOTOR CONTROL BLOCK
CN421
CN422
M1002
CS1001
PG1001
PG1002
PG1003
CASSETTE IN DET
IC1 PS4005
CC-23
CASSETTE DOWN DET
IC1 PS4005
CC-24
PL1001
(12V, 55mA)
PL1002
(12V, 55mA)
M1005
CASSETTE COMPARTMENT
(MCB2B15)
CN001
CC-22
SV-74B
CN401
CN402
CN403
CN404
CN405
CN406
CN407
CN408
CN409
CN410
CN411
CN412
CN413
VA-35B
CN101
CN102
CN103
CN104
CN105
CN106
CN107
CN108
CN109
CN110
S1006
COLOR
CN1003
VIDEO OUT
CN1004
AUDIO CH-1
CN1005
AUDIO CH-2
CN1006
AUDIO MONITOR


FRAME
FRAME
LD-16
H1001
ROTARY TRANSFORMER
VIDEO CH-B
VIDOE CH-A
AH-11
H1002
AUDIO HEAD
CH-1
CH-2
CTL HEAD
H1003
FR CTL
EC-23
⚠ SY-51
KY-91B
CN1007 REMOTE
RV1001 TRACKING VR
S1006 COLOR LOCK
NORMAL
CN1002 TV
S1002 TIMER
OFF
PLAY
CN1003 VIDEO OUT
CN1004 AUDIO CH-1 OUT
CN1005 AUDIO CH-2 OUT
CN1006 AUDIO MONITOR OUT
PH-5
D1 BR5104S
PH-5
Q1 SPS102
TAPE BEGINNING SENSOR
THREAD END DET
UNTHREAD END DET
D1 PS4005
D2 PS4005
PTC-17
TAPE END SENSOR LED
D1 BR5104S
PH-5
M1003 THREADING (DNR-4700A)
LM-13
PM1001 TAKE UP IDLER SOL (12V, 9.5/52 Ω)
PM1002 TAKE UP BRAKE SOL (12V, 12/90 Ω)
IC1 PS4005
PTC-16
TAKE UP ROTATION DET
PC1 MB-1102 TENSION REGULATOR DET
SE-46
TG-22
M1006 REEL MOTOR
RM-39
⚠ PD-30
IC1 PS4005
SW-50
FR UNTHREAD END DET
PM1008 PINCH (12V, 7/35 Ω)
PM1004 SUPPLY IDLER SOL (12V, 9.5/52 Ω)
PM1005 SUPPLY BRAKE SOL (12V, 12/90 Ω)
PM1007 SEARCH (12V, 12/90 Ω)
PM1006 SKEW (12V, 80 Ω)
PH-5
Q1 SPS102
TAPE END SENSOR
IC1 PS4005
PTC-16
SUPPLY ROTATION DET
⚠ PD-29
REEL MOTOR DRIVER
Q1 2SA771
PT-9
CN501
CN502
CN503
CN504
CN505
CN506
CN507
CN508
CN509
CN511
CN512
CN513
CN514
CN515
CN516
CN517
CN518
CN519
CN520
CN521
CN522
CN702
CN703
CN704
CN705
CN706
CN707
CN708
CN710
CN857
CN808

NOTE:

The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

SECTION 15
SPARE PARTS AND FIXTURE

15-1. PARTS INFORMATION

(1) The shaded and ⚠ -marked components are critical to safety.
Replace only with same components as specified.

(2) Replacement Parts supplied from the Sony Parts Center will sometimes have a different shape from the original parts. This is due to "accommodating the improved parts and/or engineering changes" or "standardization of genuine parts".
This manual's exploded views and electrical spare parts list indicate the part numbers of "the standardized genuine parts at the present". Regarding engineering part changes in out engineering department, refer to Sony service bulletins and service manual supplements.

(3) The parts marked with "s" in the SP column of the exploded views and electrical spare parts lists are normally stocked for replacement purposes. The parts marked with "o" in the SP column are not normally required for routine service work. Orders for parts marked with "o" will be processed, but allow for additional delivery time.

(4) Item with no part number and/or no description are not stocked because they are seldom required for routine service.

(5) (T) after a spring description is shown on the exploded views in order to indicate the number of a spring turn required for the use.
(Example)
Spring, tension (24T); This spring must be cut at its 24th turn for actual use.

15-2. EXPLODED VIEW

- Exploded views are composed of the following blocks.

(1) Reel Chassis (1)
    supply reel table
    supply tension regulator arm
    search solenoid
    supply main brake
    reel motor
(2) Reel Chassis (2)
    take-up reel table
    FF/REW idler
    take-up main brake
    take-up tension regulator arm
    R brake
(3) Reel Chassis (3)
    supply idler solenoid
    take-up idler solenoid
    FF/REW idler pulley
    supply brake solenoid
    take-up brake solenoid
(4) Threading Ring Block
    threading ring
    gear box
    T correction guide
    tape beginning sensor
    FR detector
(5) Threading Arm
    T drawer arm
    S drawer arm
    S drawer roller
    drawer lever
(6) Drum and Capstan Blocks
    head drum
    capstan motor
    audio/CTL head
(7) Erase Head Base and S Guard Blocks
    erase head base
    S guard

(8) Pinch Lever and Pinch Solenoid Blocks
    pinch lever
    pinch roller pre-set cam
    pinch solenoid

(9) Cassette-up Compartment Block

(10) Function Control
    function control panel (except ornamental panel)

(11) Front Panel Block
    ornamental front panel
    key top

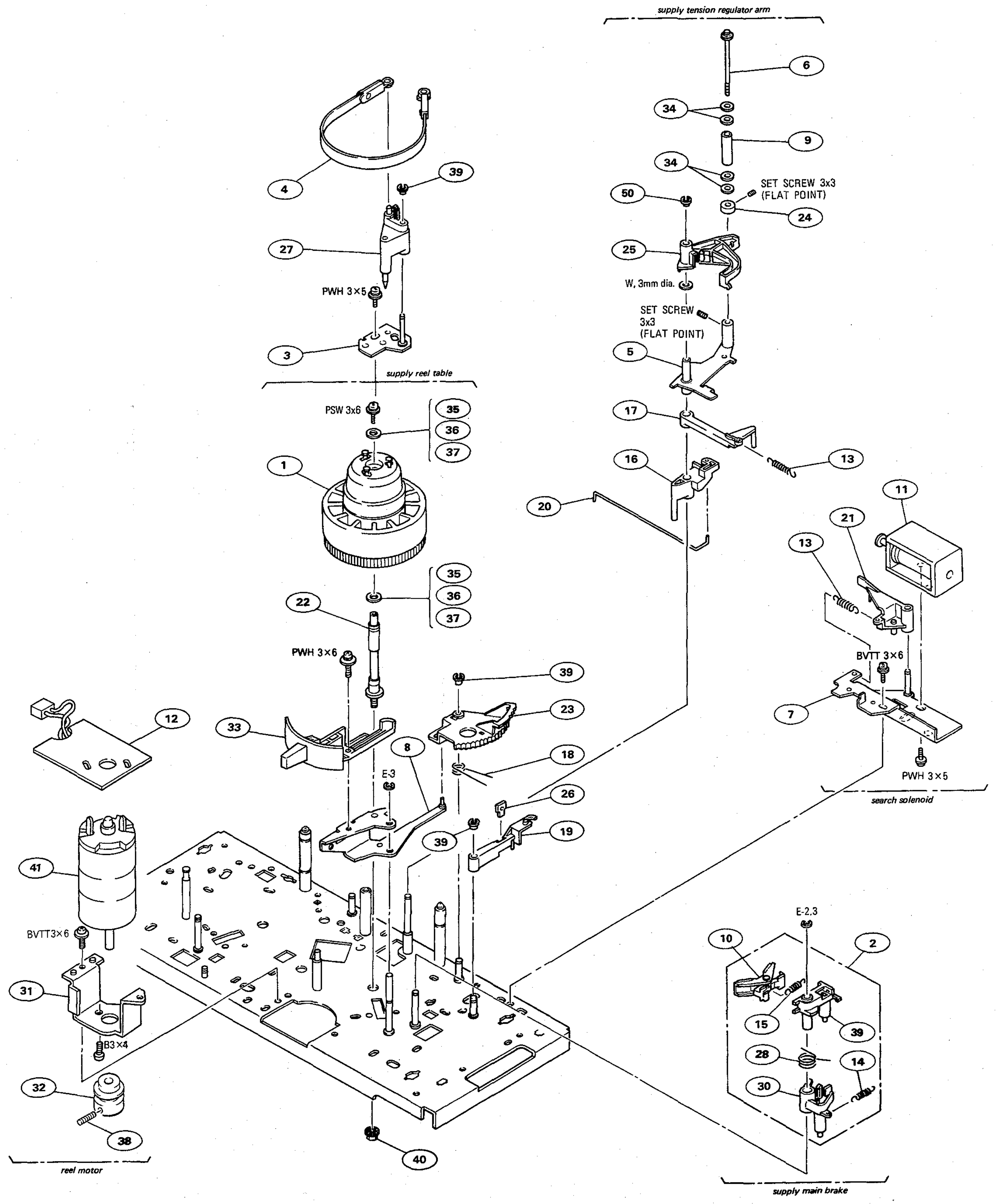
(12) Chassis Block (1)
    meter panel
    power switch block
    cassette holder

(13) Chassis block (2)
    printed circuit boards

(14) Rear Panel
    switching regulator
    RF case
    printed circuit boards

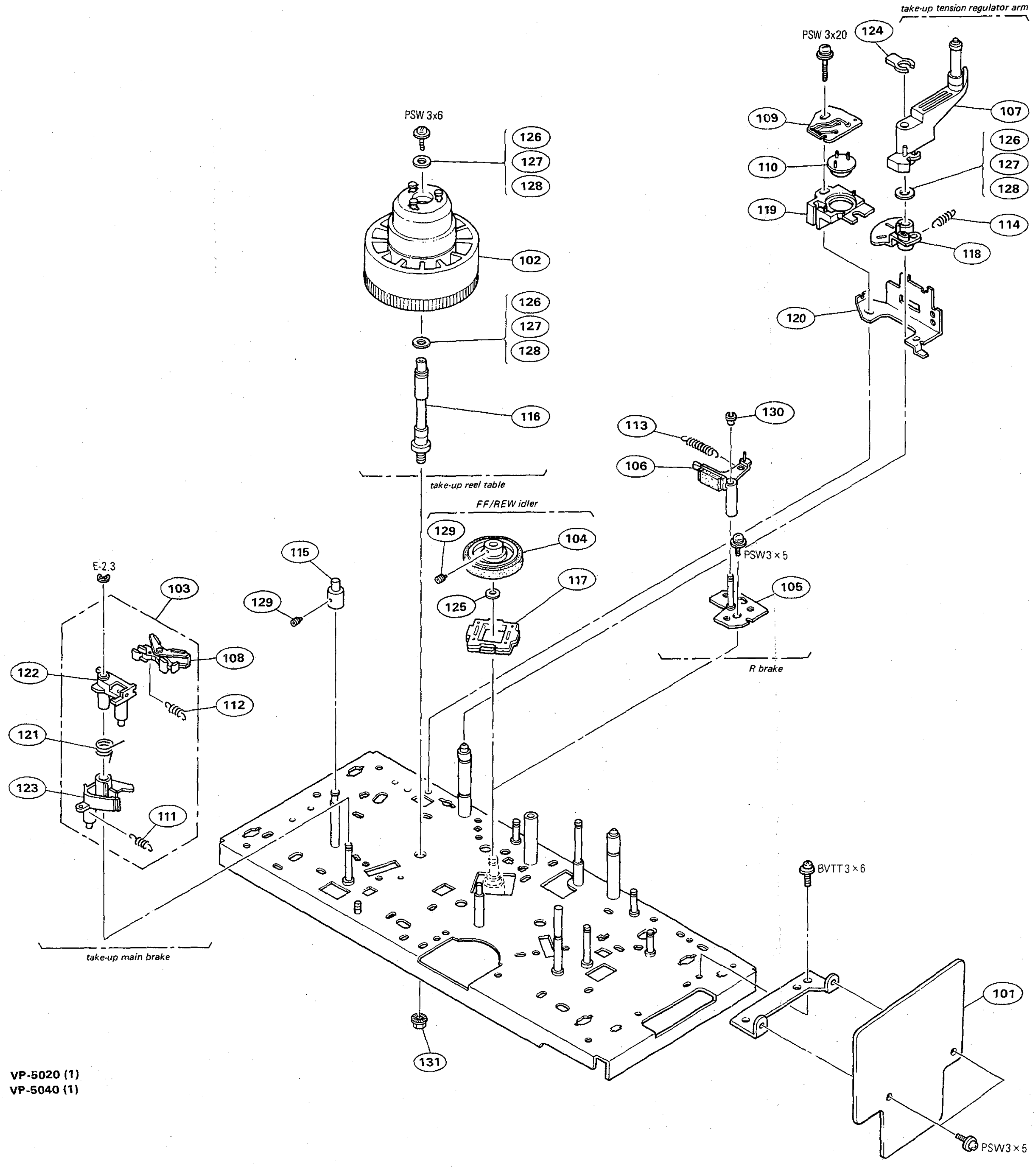
(15) Ornamental Panel Block
    ornamental panels

Reel Chassis (1)


supply tension regulator arm
6
34
9
34
50
SET SCREW 3x3 (FLAT POINT)
24
25
W, 3mm dia.
SET SCREW 3x3 (FLAT POINT)
5
17
16
13
20
11
21
13
BVTT 3×6
7
PWH 3×5
search solenoid
4
39
27
PWH 3×5
3
supply reel table
PSW 3x6
35
36
37
1
35
36
37
22
PWH 3×6
12
33
39
23
8
18
E-3
26
19
39
41
BVTT3×6
31
B3×4
32
38
40
reel motor
E-2.3
10
2
15
39
28
14
30
supply main brake

No.	Part No.	SP	Description
1	A-6739-017-A	s	TABLE ASS'Y, REEL
2	A-6741-038-B	s	BRAKE ASS'Y, MAIN
3	X-3668-706-0	o	BASE ASS'Y, S TENSION REGULATOR
4	X-3668-707-0	s	BAND ASS'Y, S TENSION REGULATOR
5	X-3668-708-0	s	ARM (A) ASS'Y, S TENSION REGULATOR
6	X-3668-709-0-	s	SHAFT (1) ASS'Y, ROLLER
7	X-3668-717-0	o	BASE ASS'Y, SEARCH
8	X-3668-725-0	o	ARM (C) ASS'Y, SKEW
9	X-3668-727-0	o	GUIDE ASS'Y, TAPE
10	X-3668-749-0	s	HOLDER ASS'Y, LINING
11	1-454-417-11	s	SOLENOID, PLUNGER
12	1-618-873-11	o	PRINTED CIRCUIT BOARD, RM-39
13	3-534-238-XX	s	SPRING, TENSION (23T)
14	3-535-369-XX	s	SPRING, TENSION (12T)
15	3-548-124-00	s	SPRING, TENSION
16	3-668-787-02	s	ARM, S DETECTION
17	3-668-794-00	o	ARM (A), SKEW
18	3-668-795-00	s	SPRING
19	3-668-797-00	o	ARM, SKEW LOCK
20	3-668-804-00	s	LINK, DETECTION, TENSION
21	3-668-808-00	s	ARM, FWD, SEARCH
22	3-668-827-00	o	SHAFT (S), REEL
23	3-668-835-00	s	ARM (B), SKEW
24	3-668-874-00	s	FLANGE (1), LOWER
25	3-668-936-00	s	ARM (B), S TENSION REGULATOR
26	3-668-937-00	s	CLAW, SKEW LOCK
27	3-668-939-00	o	ARM, BAND LOCK
28	3-668-966-00	s	SPRING
29	3-668-970-00	o	ARM, BRAKE
30	3-668-971-00	o	ARM, BRAKE RELEASE
31	3-672-743-01	o	BRACKET, MOTOR
32	3-672-744-01	s	PULLEY (R), MOTOR
33	3-672-787-01	s	LEVER, SKEW
34	3-701-438-01	s	WASHER, POLY 2.5MM DIA., 0.13T
35	3-701-444-01	s	WASHER, POLY 6MM DIA., 0.13T
36	3-701-444-11	s	WASHER, POLY 6MM DIA., 0.25T
37	3-701-444-21	s	WASHER, POLY 6MM DIA., 0.5T
38	3-701-506-01	s	SET SCREW, DOUBLE POINT 3x4
39	3-703-074-00	s	CAP 3, SHAFT
40	4-304-749-00	o	NUT, FLANGE
41	8-835-178-01	s	MOTOR, DC FN30-T26N1E

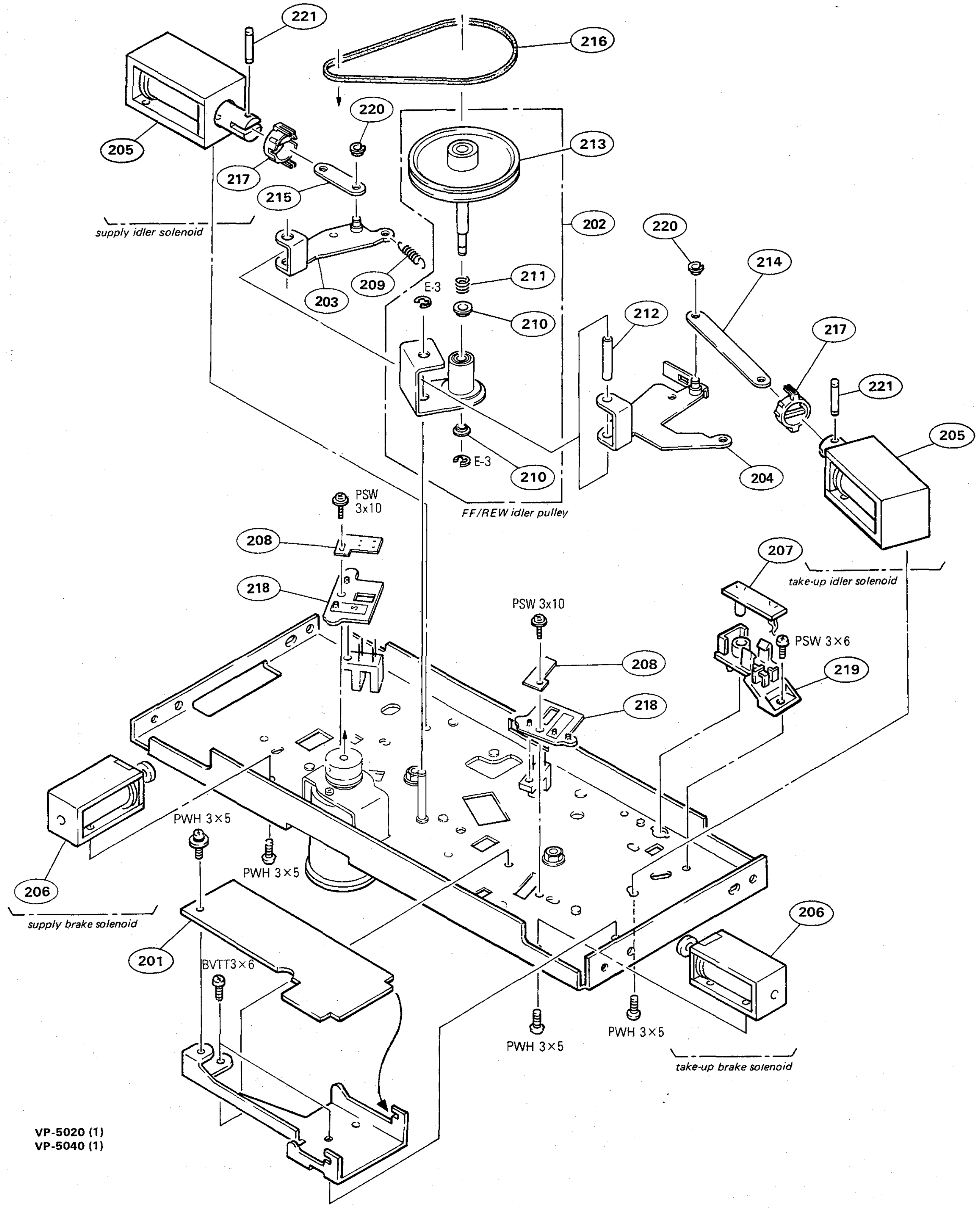
Reel Chassis (2)


take-up tension regulator arm
PSW 3x20
124
107
126
127
128
114
118
109
110
119
120
PSW 3x6
126
127
128
102
126
127
128
116
take-up reel table
FF/REW idler
129
104
117
125
115
129
113
130
106
PSW3 × 5
105
R brake
E-2.3
103
108
122
112
121
123
111
take-up main brake
BVTT3 × 6
101
131
PSW3 × 5

VP-5020 (1)
VP-5040 (1)

No.	Part No.	SP	Description
101	A-6725-536-A	o	MOUNTED CIRCUIT BOARD, PD-29
102	A-6739-017-A	s	TABLE ASS'Y REEL
103	A-6741-038-B	s	BRAKE ASS'Y MAIN
104	X-3646-026-0	s	IDLER ASS'Y FF
105	X-3668-705-0	o	BASE ASS'Y R BRAKE
106	X-3668-737-0	s	BRAKE ASS'Y R
107	X-3668-738-0	s	ARM ASS'Y T TENSION REGULATOR
108	X-3668-749-0	s	HOLDER ASS'Y LINING
109	1-618-599-11	o	PRINTED CIRCUIT BOARD, SE-46
110	1-806-232-21	s	DETECTOR MB-1102/S.N
111	3-535-369-XX	s	SPRING, TENSION (12T)
112	3-548-124-00	s	SPRING, TENSION
113	3-549-861-00	s	SPRING, TENSION
114	3-642-427-00	s	SPRING, TENSION
115	3-668-031-00	o	RETAINER (UPPER), CASSETTE
116	3-668-766-00	o	SHAFT (T), REEL
117	3-668-780-00	o	CUSHION, IDLER
118	3-668-788-00	s	ARM, T DETECTION
119	3-668-789-00	o	HOLDER, BRIDGE, PHOTO
120	3-668-798-00	o	STOPPER, T TENSION LEGULATOR
121	3-668-966-00	s	SPRING
122	3-668-970-00	o	ARM, BRAKE
123	3-668-971-00	o	ARM, BRAKE RELEASE
124	3-672-708-00	o	STOPPER, T TENSION REGULATOR
125	3-701-441-21	s	WASHER, POLY 4MM DIA., 0.5T
126	3-701-444-01	s	WASHER, POLY 6MM DIA., 0.13T
127	3-701-444-11	S	WASHER, POLY 6MM DIA., 0.25T
128	3-701-444-21	s	WASHER, POLY 6MM DIA., 0.5T
129	3-701-506-01	s	SET SCREW, DOUBLE POINT 3x4
130	3-703-074-00	s	CAP 3, SHAFT
131	4-304-749-00	o	NUT, FLANGE

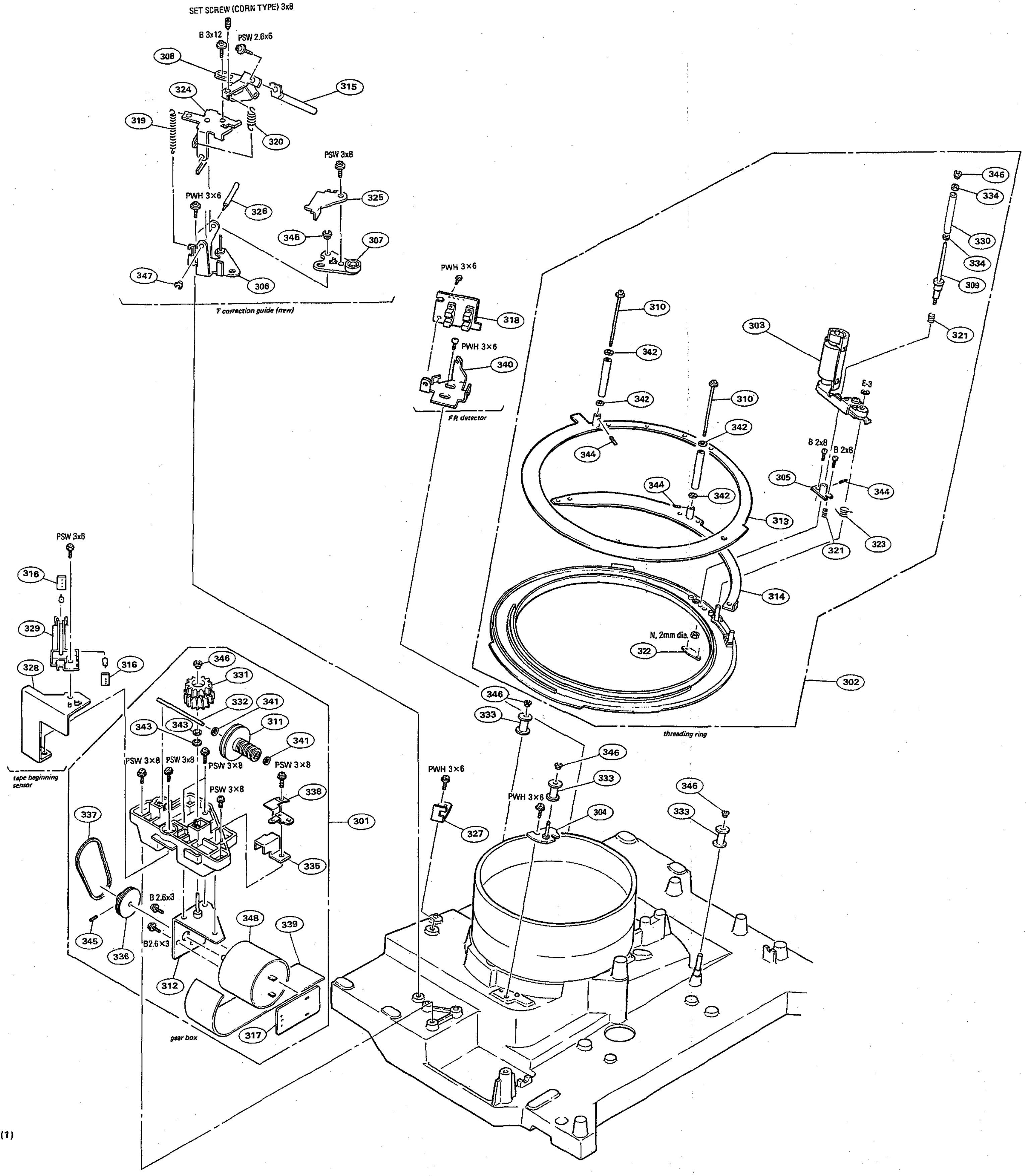
Reel Chassis (3)


221
216
220
213
205
217
215
202
220
214
supply idler solenoid
209
211
E-3
203
210
212
217
221
205
210
E-3
204
210
PSW
3x10
FF/REW idler pulley
208
207
take-up idler solenoid
218
PSW 3x10
PSW 3×6
208
219
218
PWH 3×5
PWH 3×5
206
supply brake solenoid
206
201
BVTT3×6
PWH 3×5
PWH 3×5
take-up brake solenoid

VP-5020 (1)
VP-5040 (1)

No.	Part No.	SP	Description
201	A-6725-537-A	o	MOUNTED CIRCUIT BOARD, PD-30
202	A-6740-069-B	s	PULLEY BLOCK ASS'Y IDLER
203	X-3668-703-0	o	LEVER ASS'Y, S
204	X-3668-704-0	o	LEVER ASS'Y, T
205	1-454-415-11	s	SOLENOID, PLUNGER
206	1-454-417-11	s	SOLENOID, PLUNGER
207	1-618-597-11	o	PRINTED CIRCUIT BOARD, TG-22
208	1-618-598-11	o	PRINTED CIRCUIT BOARD, PTC-16
209	3-437-452-00	s	SPRING, TENSION
210	3-650-512-00	s	COLLAR, (A)
211	3-651-572-00	s	SPRING, COMPRESSION
212	3-668-048-11	o	SPACER (DIA. 4 x 20)
213	3-668-772-00	s	SHAFT, IDLER PULLEY
214	3-668-781-00	o	JOINT, T
215	3-668-782-00	o	JOINT, S
216	3-668-785-00	s	BELT (67x2)
217	3-668-826-00	s	RETAINER PIN. SOLENOID
218	3-668-828-00	o	BRACKET, PS
219	3-672-752-01	o	HOLDER, LED
220	3-703-074-00	s	CAP 3, SHAFT
221	3-703-360-04	o	PIN, PARALLEL

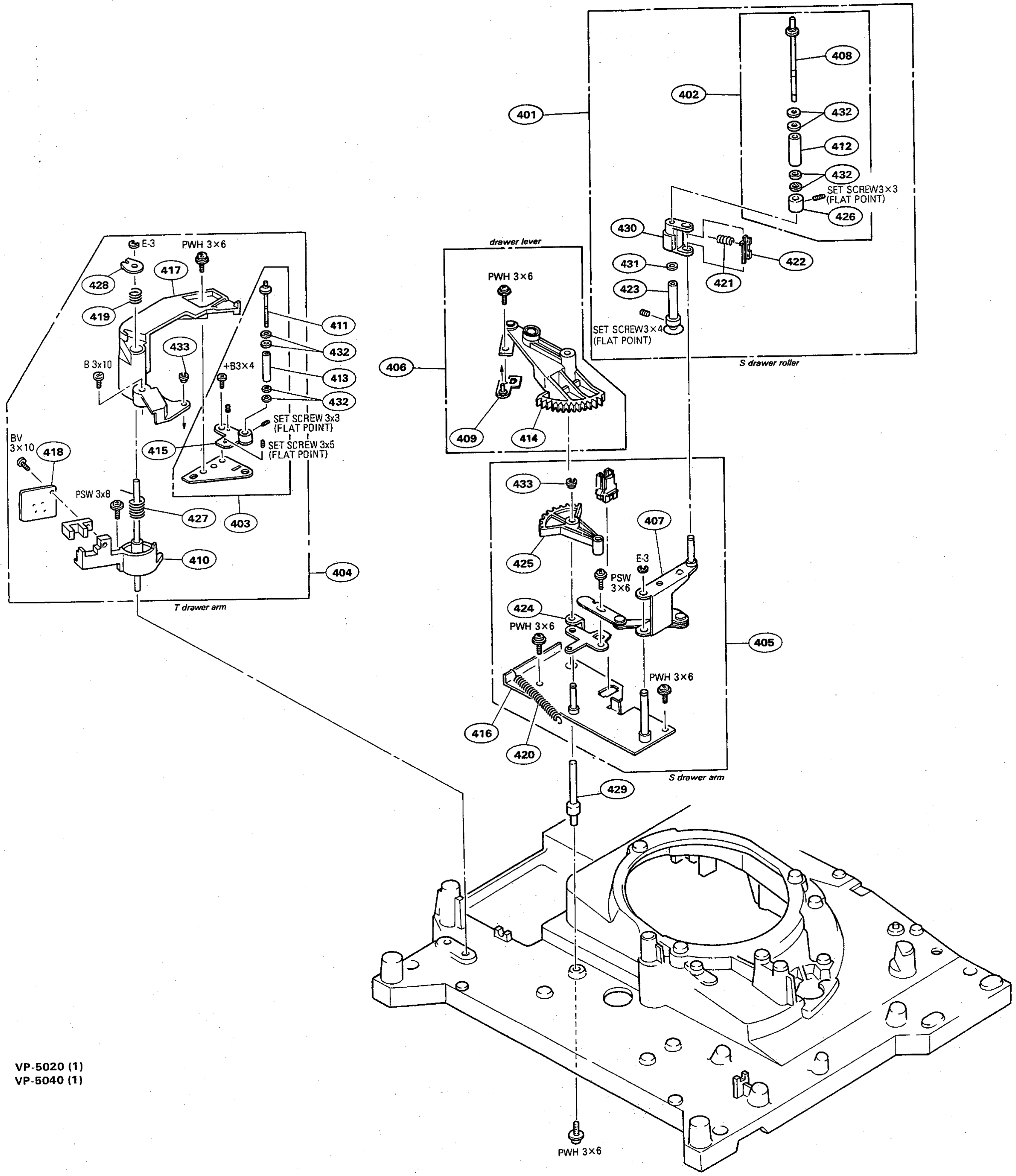
Threading Ring Block


SET SCREW (CORN TYPE) 3x8
B 3x12
PSW 2.6x6
308
315
324
319
320
PSW 3x8
325
PWH 3×6
326
346
307
347
306
T correction guide (new)
PWH 3×6
318
PWH 3×6
340
FR detector
346
334
330
334
309
310
342
303
321
342
310
E-3
342
344
B 2x8
B 2x8
305
344
344
342
313
321
323
314
N, 2mm dia.
322
302
threading ring
PSW 3x6
316
329
316
328
tape beginning sensor
346
331
332
341
343
343
311
341
PSW 3×8
PSW 3x8
PSW 3×8
PSW 3×8
PSW 3×8
338
337
301
335
B 2.6x3
B2.6×3
348
339
345
336
312
gear box
317
PWH 3×6
327
346
333
PWH 3×6
346
333
304
346
333

VP-5040 (1)

No.	Part No.	SP	Description
301	A-6750-203-A	s	BOX BLOCK ASS'Y, GEAR
302	A-6750-204-A	s	RING BLOCK ASS'Y, MAIN
303	A-6750-205-A	s	PINCH ROLLER BLOCK ASS'Y
304	X-3668-719-0	o	ROLLER ASS'Y, RING
305	X-3668-720-0	o	BASE ASS'Y, ROLLER, PRECEDING
306	X-3668-721-0	o	CHASSIS ASS'Y, GUIDE
307	X-3668-722-0	s	LOCKER ASS'Y, FR
308	X-3668-723-2	o	ARM ASS'Y, GUIDE, T CORRECTION
309	X-3668-724-3	s	SHAFT ASS'Y, ROLLER, PRECEDING
310	X-3668-733-0	s	SHAFT ASS'Y, SR GUIDE
311	X-3668-743-0	s	PULLEY ASS'Y, WORM
312	X-3672-704-1	o	BRACKET ASS'Y, MOTOR
313	X-3672-710-1	o	RING (UPPER) ASS'Y, SUB
314	X-3672-711-1	o	RING (LOWER) ASS'Y, SUB
315	X-3672-718-1	s	SHAFT ASS'Y GUIDE
316	1-603-737-00	o	PRINTED CIRCUIT BOARD, PH-5
317	1-618-600-11	s	PRINTED CIRCUIT BOARD, LM-13
318	1-618-872-11	o	PRINTED CIRCUIT BOARD, PTC-17
319	3-143-067-00	s	SPRING, TENSION
320	3-437-289-00	s	SPRING, TENSION
321	3-634-196-00	s	SPRING
322	3-668-743-00	o	NUT, PLATE, ROLLER, PRECEDING
323	3-668-745-00	s	SPRING
324	3-668-749-02	o	ARM (A), GUIDE, T CORRECTION
325	3-668-753-00	o	PLATE, ADJUSTMENT, FR LOCKER
326	3-668-754-00	o	SHAFT, GUIDE ARM, T CORRECTION
327	3-668-755-00	o	PLATE, STOPPER, SR
328	3-668-900-00	o	BRACKET, T SENSOR
329	3-668-901-00	s	HOLDER, T PHOTO
330	3-668-917-00	s	ROLLER, PRECEDING
331	3-668-947-00	s	PINION, L
332	3-668-948-00	o	SHAFT, WORM
333	3-668-963-00	s	ROLLER, RING
334	3-669-926-01	s	WASHER (3), THRUST
335	3-669-960-00	o	RETAINER, SHAFT
336	3-672-736-01	s	PULLEY, LM
337	3-672-737-01	s	BELT, SQUARE
338	3-672-738-01	o	PLATE, GROUND, SLED
339	3-672-739-01	o	BELT, LM SHIELD
340	3-672-790-01	o	BRACKET, FR DETECTION
341	3-701-437-21	s	WASHER, POLY 2MM DIA., 0.5T
342	3-701-438-11	s	WASHER, POLY 2.5MM DIA., 0.25T
343	3-701-439-21	s	WASHER, POLY 3MM DIA., 0.5T
344	3-701-505-00	s	SET SCREW, DOUBLE POINT 3x3
345	3-701-506-01	s	SET SCREW, DOUBLE POINT 3x4
346	3-703-074-00	s	CAP 3, SHAFT
347	3-703-075-00	s	CAP 2, SHAFT
348	8-835-055-01	s	MOTOR, DC (DNR-4700A)

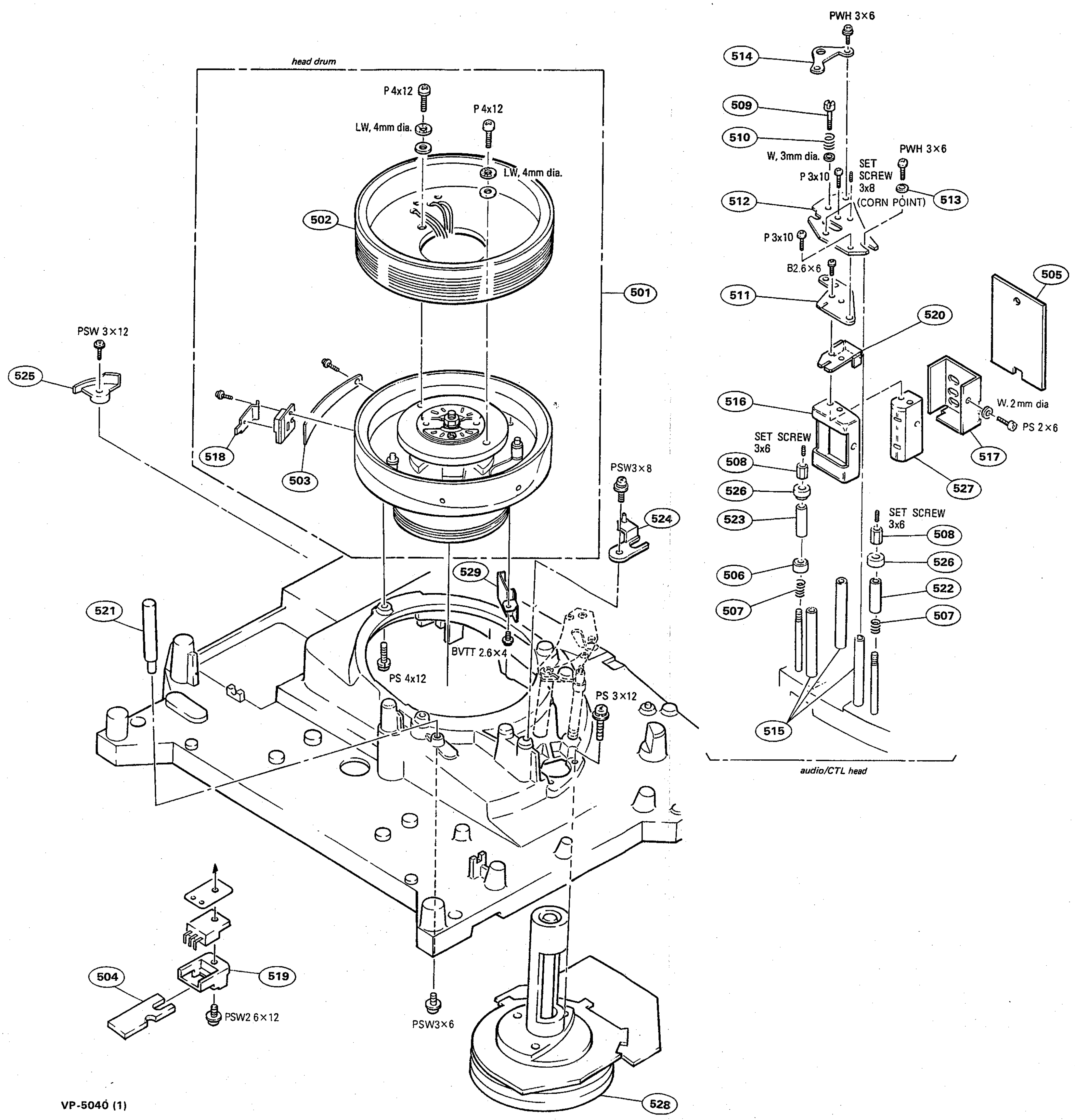
Threading Arm


401
402
408
432
412
432
SET SCREW3×3 (FLAT POINT)
426
430
422
421
431
423
SET SCREW3×4 (FLAT POINT)
S drawer roller
drawer lever
PWH 3×6
406
409
414
E-3
PWH 3×6
428
417
419
411
432
433
B 3x10
+B3×4
413
432
SET SCREW 3x3 (FLAT POINT)
SET SCREW 3x5 (FLAT POINT)
415
BV 3×10
418
PSW 3x8
427
403
410
404
T drawer arm
433
407
425
E-3
PSW 3×6
424
PWH 3×6
405
PWH 3×6
416
420
S drawer arm
429
PWH 3×6

VP-5020 (1)
VP-5040 (1)

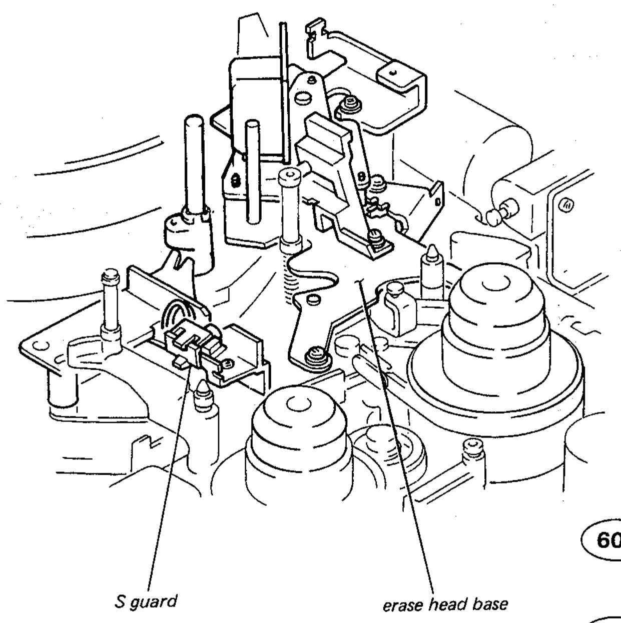
No.	Part No.	SP	Description
401	A-6746-021-B	s	ROLLER BLOCK ASS'Y, S DRAWER
402	A-6746-034-A	s	ROLLER BLOCK ASS'Y (2), DRAWER
403	A-6746-045-A	s	ROLLER BLOCK ASS'Y, T GUIDE
404	A-6750-200-A	o	ARM BLOCK ASS'Y, T DRAWER
405	A-6750-201-A	o	ARM BLOCK ASS'Y, S DRAWER
406	A-6750-202-A	o	LEVER BLOCK ASS'Y, DRAWER
407	X-3668-711-0	o	ARM ASS'Y, S DRAWER
408	X-3668-712-3	s	SHAFT (2) ASS'Y, ROLLER
409	X-3668-713-0	o	LINK (B) ASS'Y, DRIVING
410	X-3668-714-0	o	RETAINER ASS'Y, ARM T DRAWER
411	X-3668-716-0	s	SHAFT (3) ASS'Y, ROLLER
412	X-3668-718-0	s	GUIDE ASS'Y, TAPE
413	X-3668-727-0	o	GUIDE ASS'Y, TAPE
414	X-3668-729-0	s	LEVER ASS'Y, DRAWER
415	X-3672-705-1	o	PLATE ASS'Y, GUIDE, T
416	X-3672-706-1	o	BASE ASS'Y, S DRAWER ARM
417	X-3672-708-1	o	ARM ASS'Y, T DRAWER
418	1-603-435-00	o	PRINTED CIRCUIT BOARD, SW-50
419	3-534-854-00	s	SPRING, COMPRESSION
420	3-540-506-00	s	SPRING, TENSION
421	3-644-718-00	s	SPRING, COMPRESSION
422	3-668-718-00	s	RETAINER, SPRING, S DRAWER
423	3-668-719-00	s	HOLDER (L), S GUIDE
424	3-668-720-00	o	LIMITER, S DRAWER
425	3-668-721-00	s	ARM, S DRIVING
426	3-668-724-00	o	FLANGE (2), LOWER
427	3-668-734-00	o	SPRING
428	3-668-735-00	s	RETAINER, SPRING
429	3-668-760-00	o	SHAFT, DRAWER LEVER
430	3-668-833-00	s	HOLDER (M), GUIDE, S
431	3-669-946-00	s	RING (P4), 0
432	3-701-438-01	s	WASHER, POLY 2.5MM DIA., 0.13T
433	3-703-074-00	s	CAP 3, SHAFT

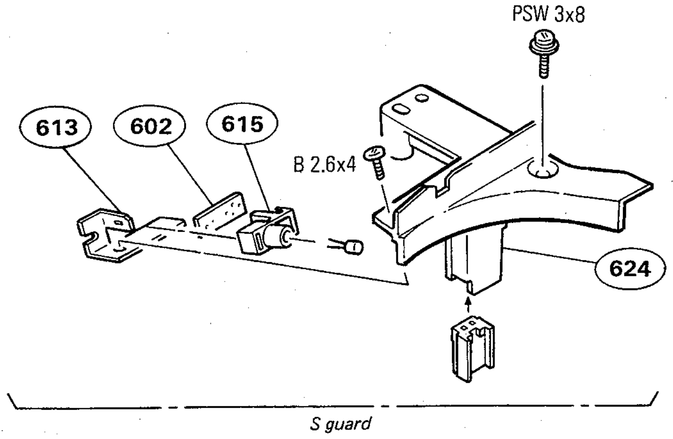
Drum and Capstan Blocks

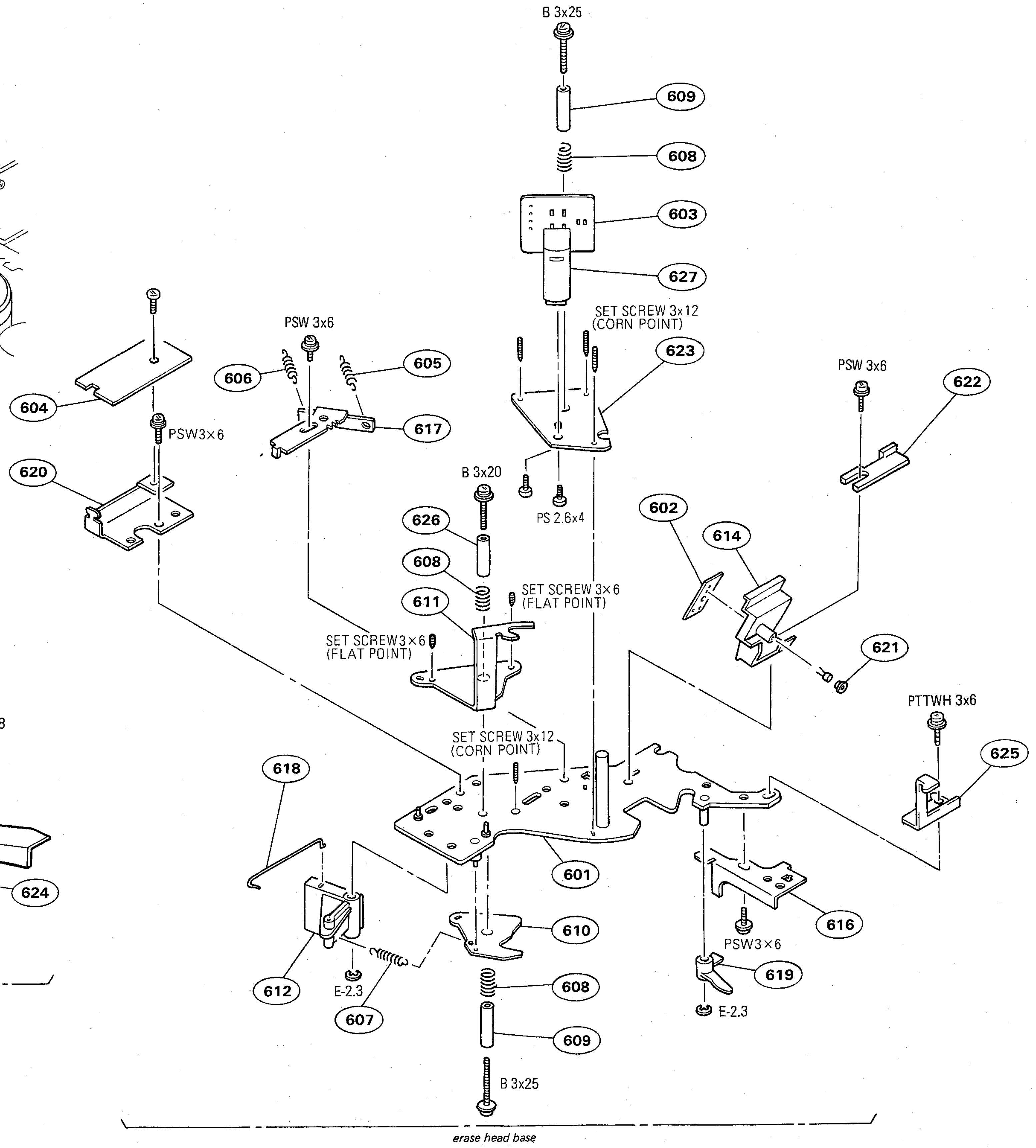

head drum
P 4x12
P 4x12
LW, 4mm dia.
LW, 4mm dia.
502
501
PSW 3×12
525
518
503
PSW3×8
524
529
521
BVTT 2.6×4
PS 4x12
PS 3×12
504
519
PSW2 6×12
PSW3×6
528
VP-5040 (1)
PWH 3×6
514
509
510
W, 3mm dia.
PWH 3×6
SET SCREW 3x8 (CORN POINT)
P 3x10
513
512
P 3x10
B2.6×6
511
505
520
516
W, 2mm dia
PS 2×6
SET SCREW 3x6
508
517
526
527
523
SET SCREW 3x6
508
526
506
522
507
507
515
audio/CTL head

No.	Part No.	SP	Description
501	A-6709-559-A	s	HEAD DRUM ASS'Y, DUH-38A-R
502	A-6709-561-A	s	UPPER DRUM ASS'Y, DUR-38-R
503	1-586-633-00	s	DETECTOR, DEW
504	1-605-018-00	o	PRINTED CIRCUIT BOARD, PT-9
505	1-618-602-11	o	PRINTED CIRCUIT BOARD, AH-11
506	3-641-612-00	s	GUIDE, TAPE
507	3-641-615-00	s	SPRING, COMPRESSION
508	3-641-616-00	s	NUT, TAPE GUIDE ADJUSTMENT
509	3-641-621-00	s	SCREW, HEAD ADJUSTING
510	3-641-622-00	s	SPRING, COMPRESSION
511	3-641-640-00	o	BRACKET, (1), C.T.L. HEAD
512	3-641-641-02	o	BRACKET, C.T.L. HEAD, (2)
513	3-645-076-00	o	WASHER, M-REEL S
514	3-647-815-00	o	PLATE, ADJUSTMENT, CTL HEAD
515	3-647-816-00	o	POLE, SUPPORT, CTL BRACKET
516	3-650-301-00	o	COVER, HEAD, D-CTL
517	3-650-302-00	o	COVER, HEAD (REAR)
518	3-655-631-00	o	TERMINAL, GROUND
519	3-669-904-00	o	HOLDER, PT
520	3-669-985-00	o	PLATE, ADJUSTMENT
521	3-672-729-01	s	TG-2
522	3-672-730-01	s	TG-3
523	3-672-731-01	s	TG-4
524	3-672-762-01	o	PIN, DRUM
525	3-672-763-01	o	CAM, P OFFSET PREVENTION
526	3-688-807-01	s	FLANGE, TAPE GUIDE
527	8-829-358-41	s	HEAD (PP150-5803B)
528	8-835-177-01	s	MOTOR, DC BHF-1915A
529	3-710-826-01	o	SHIELD, CN

Erase Head Base and S Guard Blocks

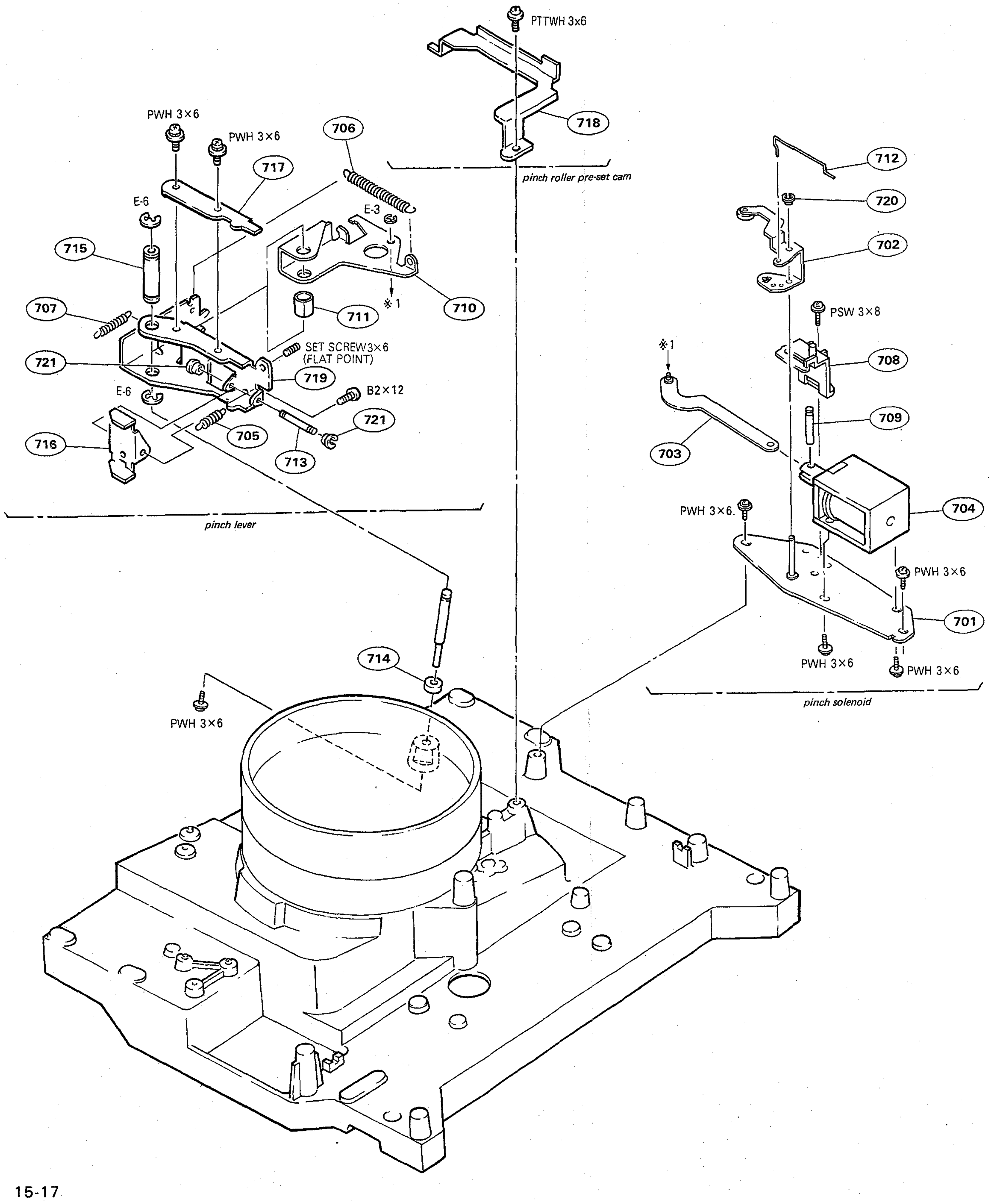

S guard
erase head base


PSW 3x8
613
602
615
B 2.6x4
624
S guard


B 3x25
609
608
603
627
SET SCREW 3x12
(CORN POINT)
623
PSW 3x6
606
605
617
604
PSW3×6
620
PSW 3x6
622
B 3x20
PS 2.6x4
626
608
602
614
SET SCREW 3×6
(FLAT POINT)
611
SET SCREW3×6
(FLAT POINT)
621
PTTWH 3x6
SET SCREW 3x12
(CORN POINT)
618
625
601
616
610
PSW3×6
619
612
E-2.3
608
E-2.3
607
609
B 3x25
erase head base

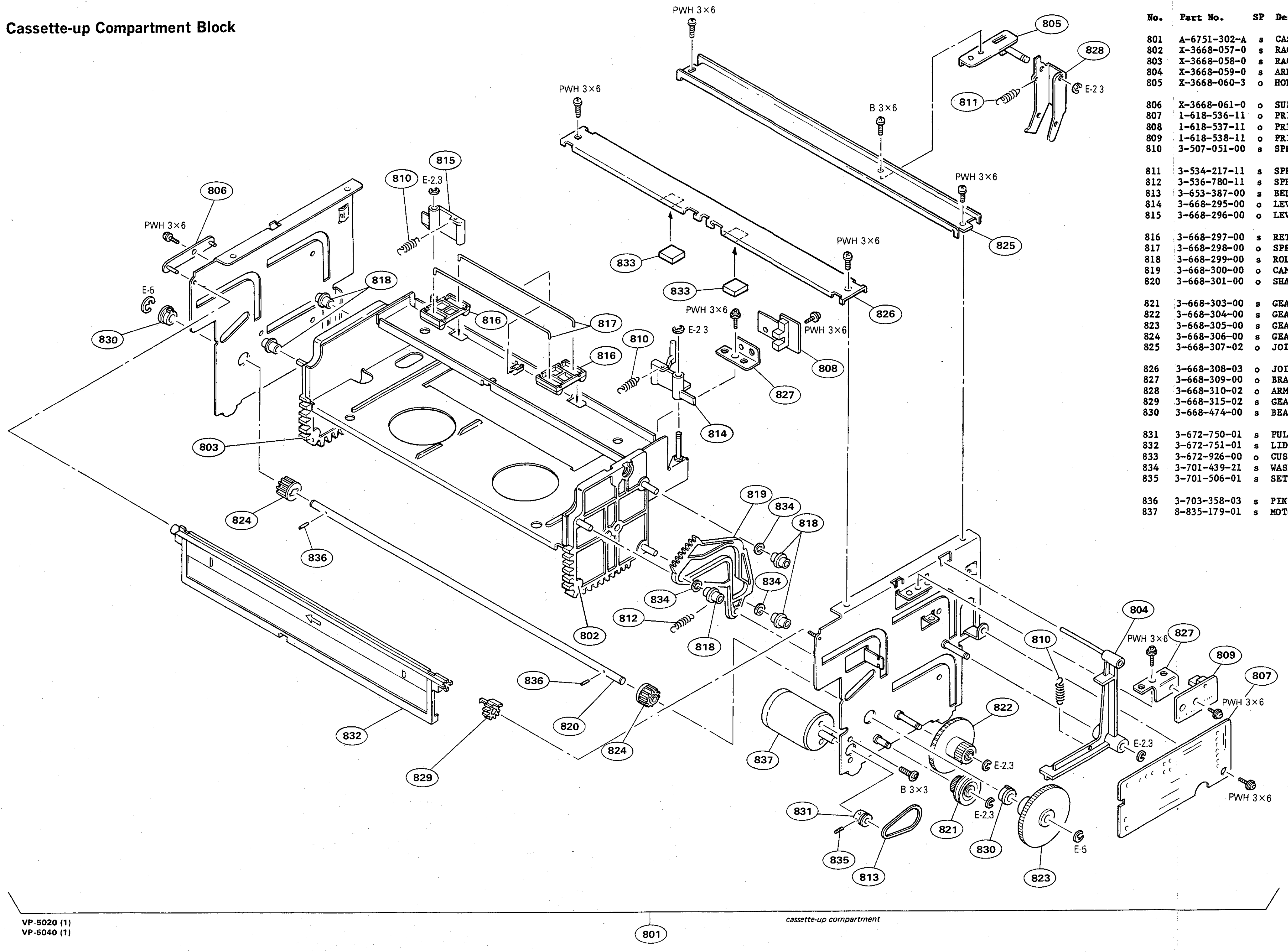
No.	Part No.	SP	Description
601	X-3668-728-0	o	DECK ASS'Y, E HEAD
602	1-603-737-00	o	PRINTED CIRCUIT BOARD, PH-5
603	1-618-535-11	o	PRINTED CIRCUIT BOARD, EC-23
604	1-618-602-11	o	PRINTED CIRCUIT BOARD, AH-11
605	3-534-238-XX	s	SPRING, TENSION (23T)
606	3-538-102-00	s	SPRING, TENSION
607	3-630-615-XX	s	SPRING, TENSION (18T)
608	3-637-335-00	s	SPRING, COMPRESSION (C)
609	3-657-086-00	o	SPACER (3 x 20)
610	3-668-705-00	s	HOLDER (LOWER), S
611	3-668-706-00	s	HOLDER (UPPER), S
612	3-668-708-00	o	ARM, DRIVING, CORRECTION GUIDE
613	3-668-809-02	o	BRACKET, HOLDER
614	3-668-832-02	o	HOLDER (S)
615	3-668-837-00	o	HOLDER, LED
616	3-668-859-00	o	STOPPER, RING
617	3-668-860-00	o	HOOK, SPRING, TENSION REGULATOR
618	3-668-884-03	o	JOINT, RESERVE PRESS
619	3-668-894-00	o	LEVER, RELEASE
620	3-668-962-00	o	BRACKET, AH PC BOARD
621	3-669-920-00	o	COVER, S PHOTO
622	3-669-964-00	o	PLATE, GROUND
623	3-672-723-00	o	TABLE, HEAD, E
624	3-672-764-01	s	GUARD, S
625	3-710-804-01	o	SPRING
626	4-855-006-11	s	SPACER (3 x 14)
627	8-825-514-20	s	HEAD, CTL (PP170-58)

Pinch Lever and Pinch Solenoid Blocks


PTTWH 3x6
718
pinch roller pre-set cam
PWH 3×6
PWH 3×6
706
717
E-6
E-3
715
710
※1
707
711
SET SCREW3×6 (FLAT POINT)
721
719
B2×12
E-6
721
716
705
713
pinch lever
712
720
702
PSW 3×8
※1
708
709
703
704
PWH 3×6
PWH 3×6
701
PWH 3×6
PWH 3×6
pinch solenoid
714
PWH 3×6

No.	Part No.	SP	Description
701	X-3668-734-0	o	BASE ASS'Y, PINCH PRESS
702	X-3668-735-3	s	LEVER, ASS'Y, RESERVE PRESS
703	X-3668-736-0	o	JOINT ASS'Y
704	1-454-416-11	s	SOLENOID, PLUNGER
705	2-202-432-01	s	SPRING (B), COMPRESSION
706	3-610-265-02	s	SPRING
707	3-645-392-00	s	SPRING, TENSION
708	3-668-863-00	s	GUIDE, ARBOR
709	3-668-864-00	s	PIN, SOLENOID
710	3-668-865-00	o	LEVER (B), PINCH PRESS
711	3-668-867-00	o	SPACER (8 x 9)
712	3-668-884-03	o	JOINT, RESERVE PRESS
713	3-668-895-00	o	SHAFT
714	3-672-733-01	o	TABLE, SHAFT, PRESS LEVER
715	3-672-734-01	o	SLEEVE, PINCH PRESS LEVER
716	3-672-773-01	o	PLATE, PRESS, PINCH
717	3-672-774-01	o	PLATE, ADJUSTMENT, P PRESS
718	3-672-789-01	o	DECK, PRESS, RESERVE
719	3-672-791-01	o	LEVER (A), PINCH PRESS
720	3-703-074-00	s	CAP 3, SHAFT
721	3-703-075-00	s	CAP 2, SHAFT

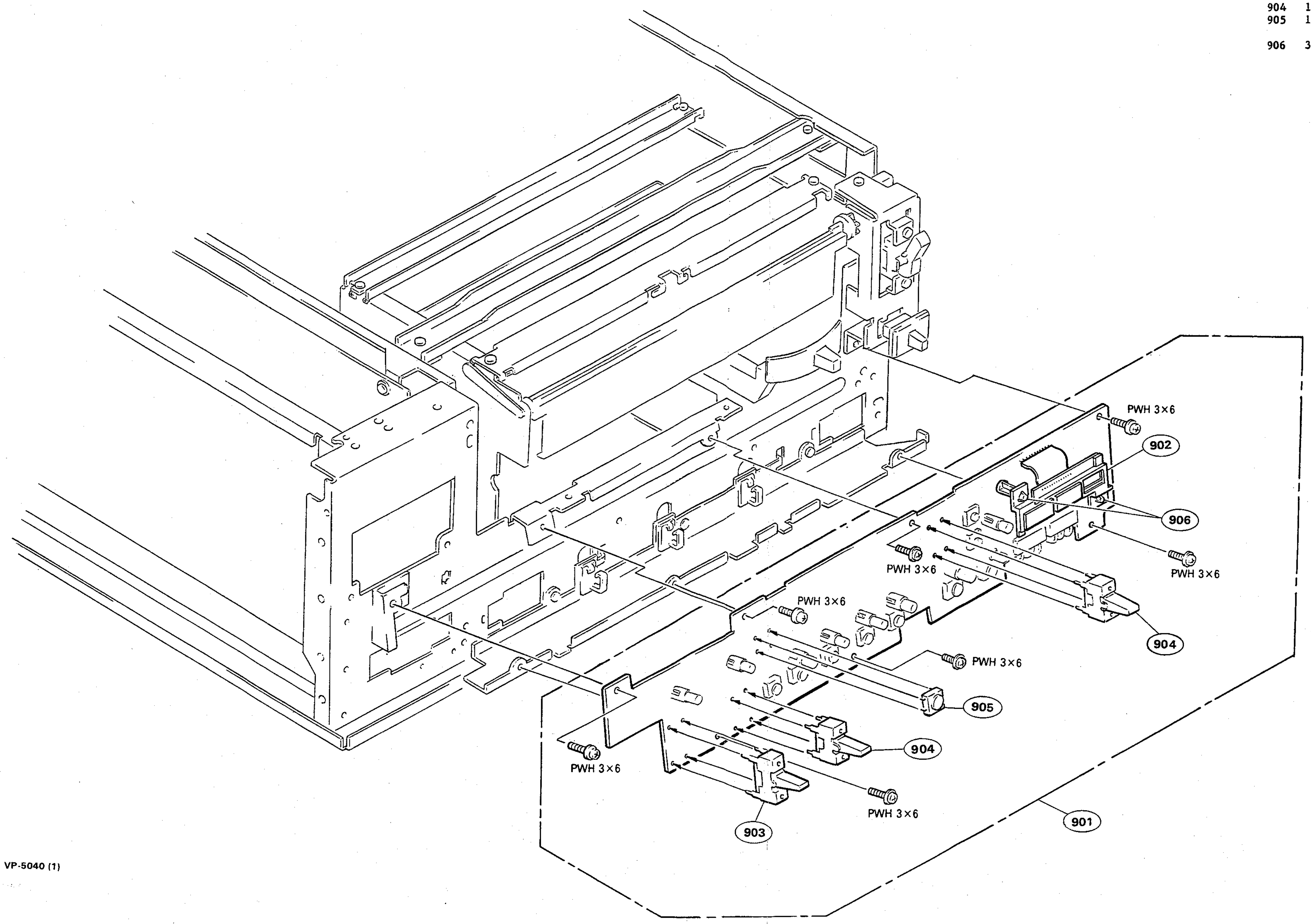
Cassette-up Compartment Block


PWH 3×6
805
828
E-2.3
811
B 3×6
PWH 3×6
PWH 3×6
825
815
810
E-2.3
806
PWH 3×6
PWH 3×6
833
833
826
E-5
818
830
816
817
PWH 3×6
E-2.3
810
PWH 3×6
816
808
827
814
803
819
834
818
824
836
834
834
812
802
818
804
827
PWH 3×6
810
809
807
PWH 3×6
836
822
820
832
824
837
E-2.3
E-2.3
829
B 3×3
E-2.3
831
821
830
PWH 3×6
E-5
835
813
823
cassette-up compartment
801

VP-5020 (1)
VP-5040 (1)

No.	Part No.	SP	Description
801	A-6751-302-A	s	CASSETTE-UP BLOCK ASS'Y
802	X-3668-057-0	s	RACK ASS'Y, CASSETTE COMPARTMENT
803	X-3668-058-0	s	RACK ASS'Y, CASSETTE COMPARTMENT
804	X-3668-059-0	s	ARM ASS'Y, SWITCH DOWN
805	X-3668-060-3	o	HOLDER ASS'Y, ARM
806	X-3668-061-0	o	SUPPORT ASS'Y, LID
807	1-618-536-11	o	PRINTED CIRCUIT BOARD, CC-22
808	1-618-537-11	o	PRINTED CIRCUIT BOARD, CC-23
809	1-618-538-11	o	PRINTED CIRCUIT BOARD, CC-24
810	3-507-051-00	s	SPRING, TENSION
811	3-534-217-11	s	SPRING, TENSION
812	3-536-780-11	s	SPRING, TENSION
813	3-653-387-00	s	BELT, LM
814	3-668-295-00	o	LEVER (RIGHT), CASSETTE PUSH-OUT
815	3-668-296-00	o	LEVER (LEFT), CASSETTE PUSH-OUT
816	3-668-297-00	s	RETAINER, CASSETTE
817	3-668-298-00	o	SPRING
818	3-668-299-00	s	ROLLER, GUIDE
819	3-668-300-00	o	CAM, LID OPEN
820	3-668-301-00	o	SHAFT, DRIVING
821	3-668-303-00	s	GEAR (A)
822	3-668-304-00	s	GEAR (B)
823	3-668-305-00	s	GEAR (C)
824	3-668-306-00	s	GEAR (D)
825	3-668-307-02	o	JOINT (R), LEFT & RIGHT
826	3-668-308-03	o	JOINT (F), LEFT & RIGHT
827	3-668-309-00	o	BRACKET, SWITCH
828	3-668-310-02	o	ARM, LID OPEN
829	3-668-315-02	s	GEAR, LID
830	3-668-474-00	s	BEARING (6)
831	3-672-750-01	s	PULLEY (C), MOTOR
832	3-672-751-01	s	LID, CASSETTE
833	3-672-926-00	o	CUSHION, LID
834	3-701-439-21	s	WASHER, POLY 3MM DIA., 0.5T
835	3-701-506-01	s	SET SCREW, DOUBLE POINT 3 x 4
836	3-703-358-03	s	PIN, PARALLEL (DIA. 2 x 8)
837	8-835-179-01	s	MOTOR, DC MCB 2B15

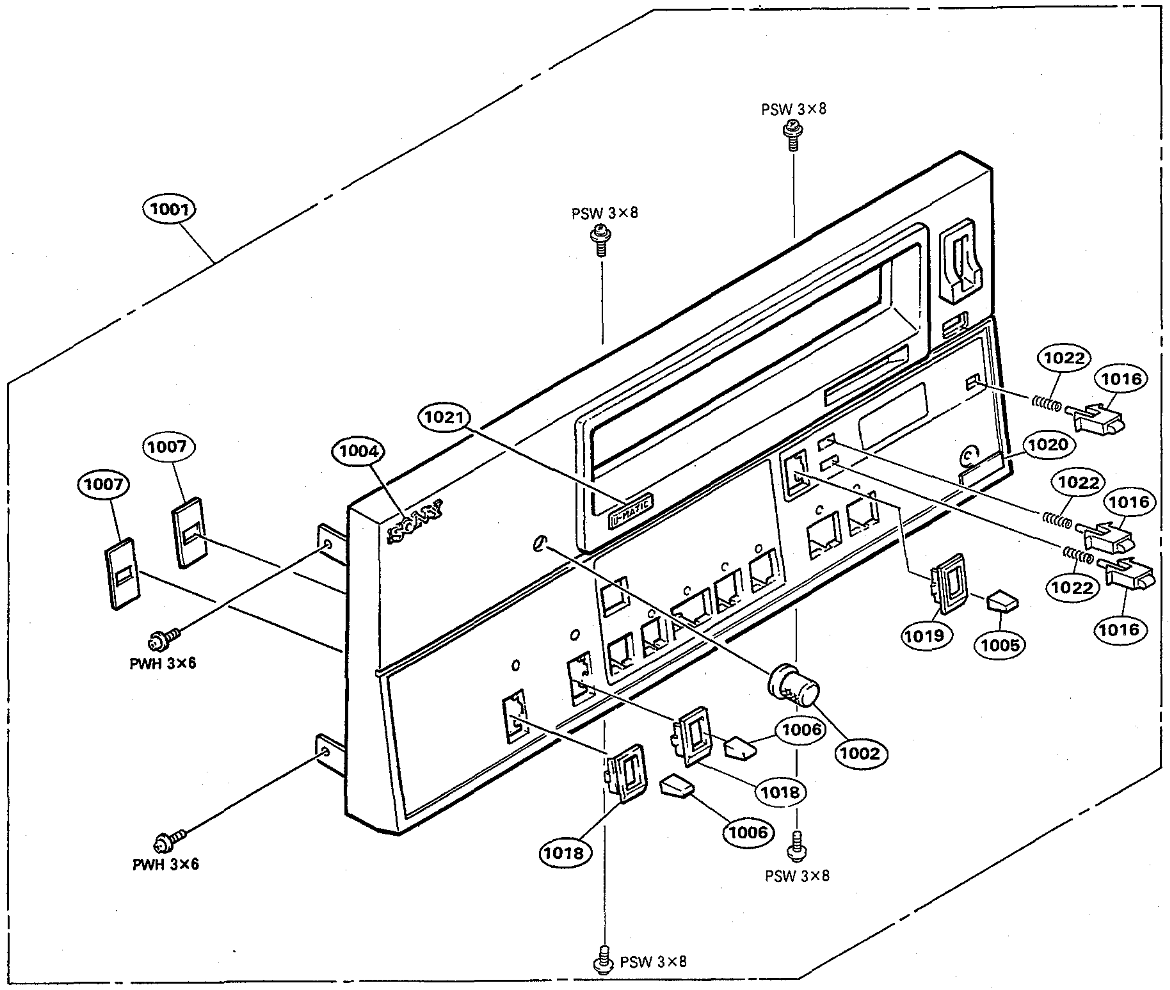
Function Control


PWH 3×6
902
906
PWH 3×6
PWH 3×6
PWH 3×6
904
PWH 3×6
905
904
PWH 3×6
PWH 3×6
901
903

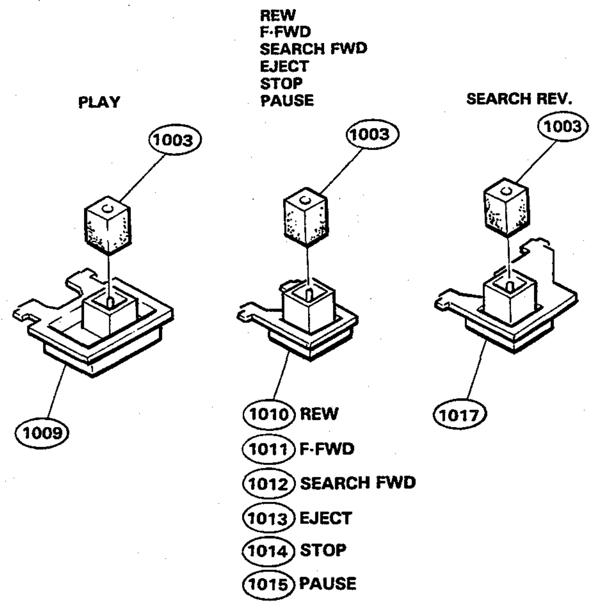
VP-5040 (1)

No.	Part No.	SP	Description
901	A-6717-434-A	o	MOUNTED CIRCUIT BOARD, KY-91B
902	1-807-441-11	s	LED BLOCK
903	1-516-963-00	s	SWITCH, LEVER SLIDE
904	1-516-995-00	s	SWITCH, LEVER SLIDE
905	1-552-539-00	s	SWITCH, KEY BOARD
906	3-672-754-01	o	HOLDER, PC BOARD

Front Panel Block

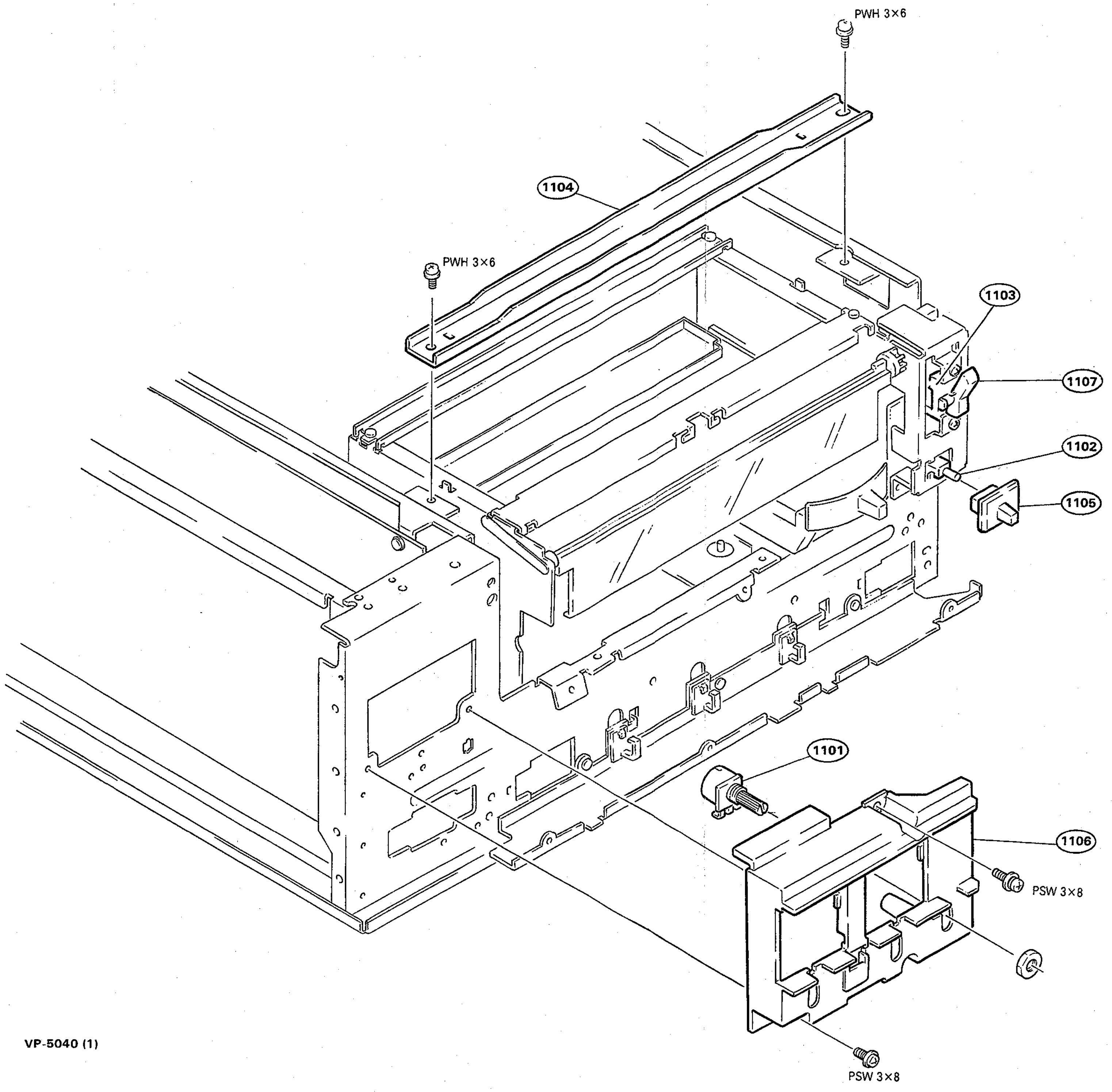

1001
PSW 3×8
PSW 3×8
1021
1004
1007
1007
PWH 3×6
1022
1016
1020
1022
1016
1022
1016
1019
1005
1006
1002
1018
1006
1018
PSW 3×8
PWH 3×6
PSW 3×8

VP-5040 (1)


PLAY
REW
F-FWD
SEARCH FWD
EJECT
STOP
PAUSE
SEARCH REV.
1003
1003
1003
1009
1010 REW
1011 F-FWD
1012 SEARCH FWD
1013 EJECT
1014 STOP
1015 PAUSE
1017

No.	Part No.	SP	Description
1001	A-6704-228-A	o	PANEL ASS'Y, FRONT
1002	X-3672-707-1	s	KNOB, ASS'Y, VOLUME
1003	2-284-744-00	o	CUSHION (B), KEY
1004	3-566-707-00	s	EMBLEM, SONY
1005	3-668-028-00	s	KNOB (SMALL), LEVER SWITCH
1006	3-668-028-21	s	KNOB (SMALL), LEVER SWITCH
1007	3-669-909-11	o	PLATE, BLIND, LEVER SWITCH
1008	3-669-909-21	o	PLATE, BLIND, LEVER SWITCH
1009	3-672-782-02	s	KEY TOP (A) "PLAY"
1010	3-672-783-02	s	KEY TOP (B) "REW"
1011	3-672-783-12	s	KEY TOP (B) "F FWD"
1012	3-672-783-22	s	KEY TOP (B) "SEARCH FWD"
1013	3-672-783-32	s	KEY TOP (B) "EJECT"
1014	3-672-783-42	s	KEY TOP (B) "STOP"
1015	3-672-783-52	s	KEY TOP (B) "PAUSE"
1016	3-672-784-01	s	KEY TOP (C)
1017	3-672-785-02	s	KEY TOP (D) "SEARCH REV"
1018	3-672-786-01	o	ESCUTCHEON (INNER), SLIDE SW
1019	3-672-786-11	o	ESCUTCHEON (INNER), SLIDE SW
1020	3-710-690-00	s	LABEL (MADE IN JAPAN)
1021	3-710-802-01	o	LABEL, U MATIC
1022	3-843-714-00	o	SPRING

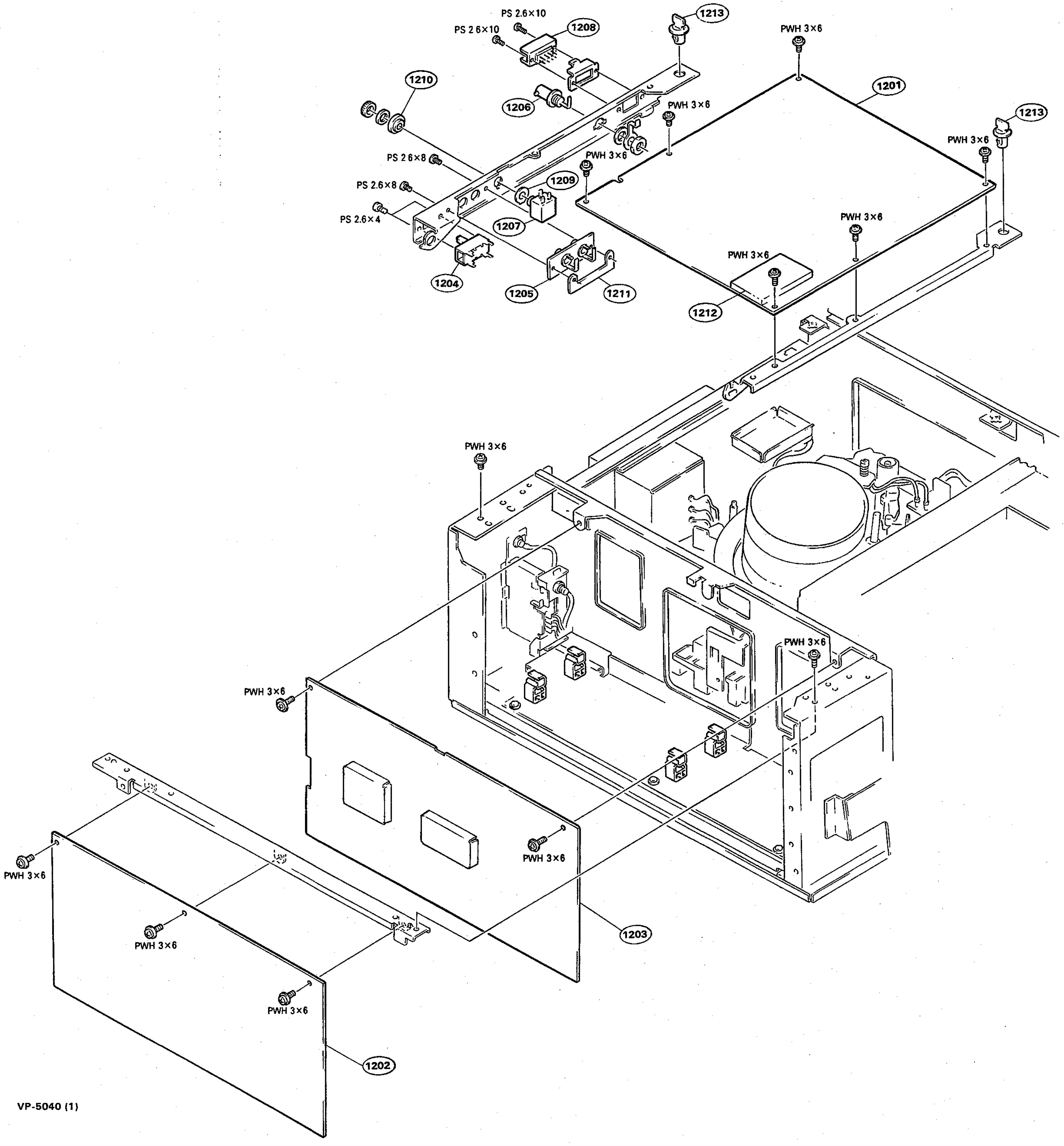
Chassis Block (1)


PWH 3×6
PWH 3×6
1104
1103
1107
1102
1105
1101
1106
PSW 3×8
PSW 3×8

VP-5040 (1)

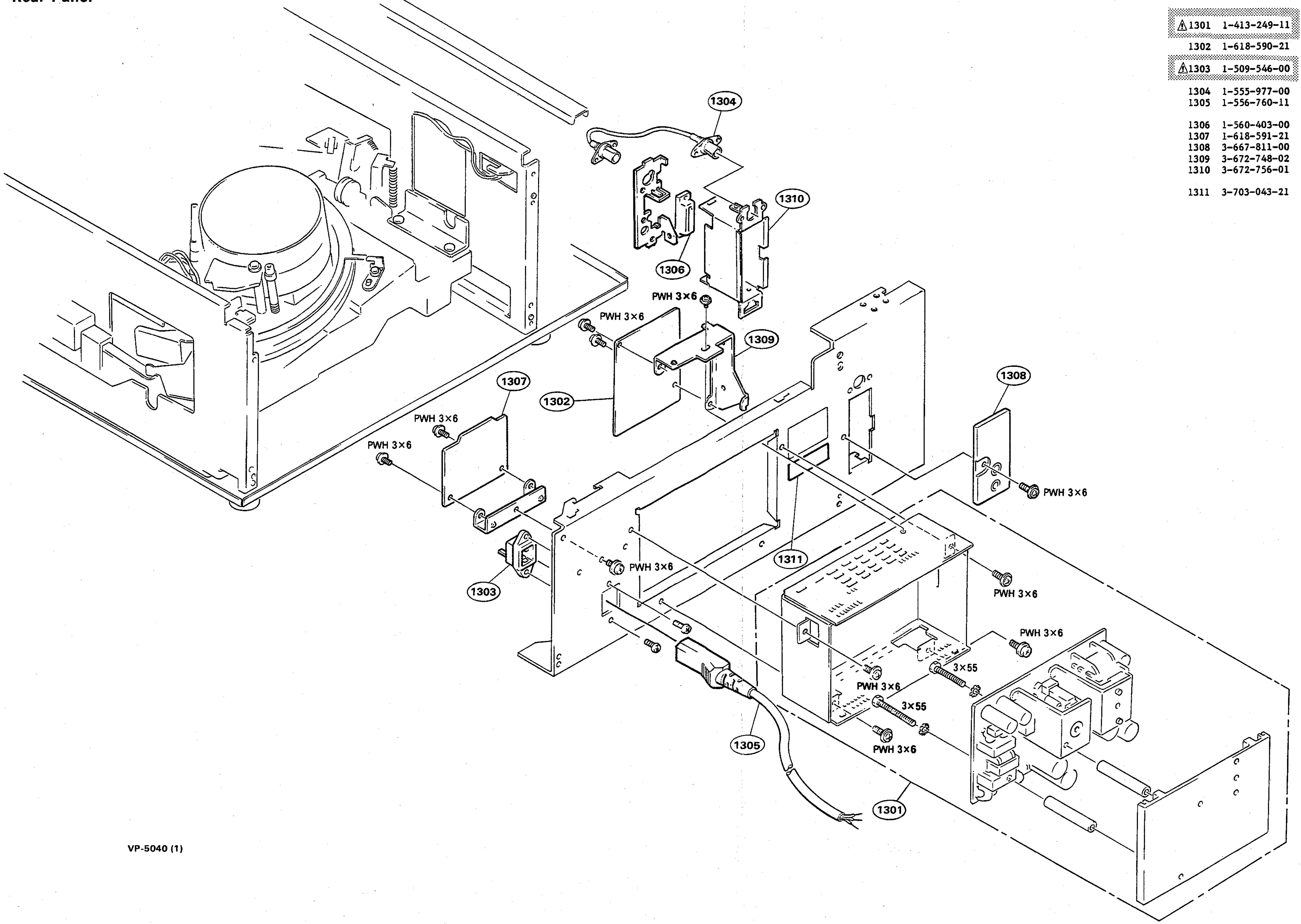
No.	Part No.	SP	Description
1101	1-237-215-11	s	RES, VAR, CARBON 100K
1102	1-552-271-00	s	SWITCH, SLIDE
⚠1103	1-570-117-31	s	SWITCH, ROCKER (AC POWER)
1104	3-672-765-01	o	BRACKET, C
1105	3-672-781-01	s	KNOB, SLIDE SWITCH
1106	3-672-795-01	o	PANEL, METER
1107	3-688-814-01	s	CAP, SWITCH

Chassis Block (2)


PS 2.6×10
PS 2.6×10
1208
1213
PWH 3×6
1210
1206
1201
PWH 3×6
1213
PWH 3×6
PS 2.6×8
PWH 3×6
1209
PS 2.6×8
PS 2.6×4
1207
PWH 3×6
1204
1205
1211
PWH 3×6
1212
PWH 3×6
PWH 3×6
PWH 3×6
PWH 3×6
PWH 3×6
PWH 3×6
PWH 3×6
1203
1202
VP-5040 (1)

No.	Part No.	SP	Description
1201	A-6711-755-A	o	MOUNTED CIRCUIT BOARD, VA-35B
1202	A-6715-324-A	o	MOUNTED CIRCUIT BOARD, SV-74B
1203	A-6717-433-A	o	MOUNTED CIRCUIT BOARD, SY-51
1204	1-516-781-XX	s	SLIDE SWITCH
1205	1-563-353-11	s	JACK, PIN (RCA) 2P
1206	1-563-354-11	s	CONNECTOR, BNC
1207	1-563-355-11	s	JACK, MINIATURE
1208	1-563-356-11	s	CONNECTOR, MULTI 8P
1209	3-437-228-00	s	INSULATOR, JACK
1210	3-437-229-01	s	INSULATOR (B), JACK
1211	3-672-747-01	o	BRACKET, JACK, 2PRCA
1212	3-710-816-01	o	CASE (VH) (M), SHIELD
1213	3-710-825-01	o	FASTENER, PLATE

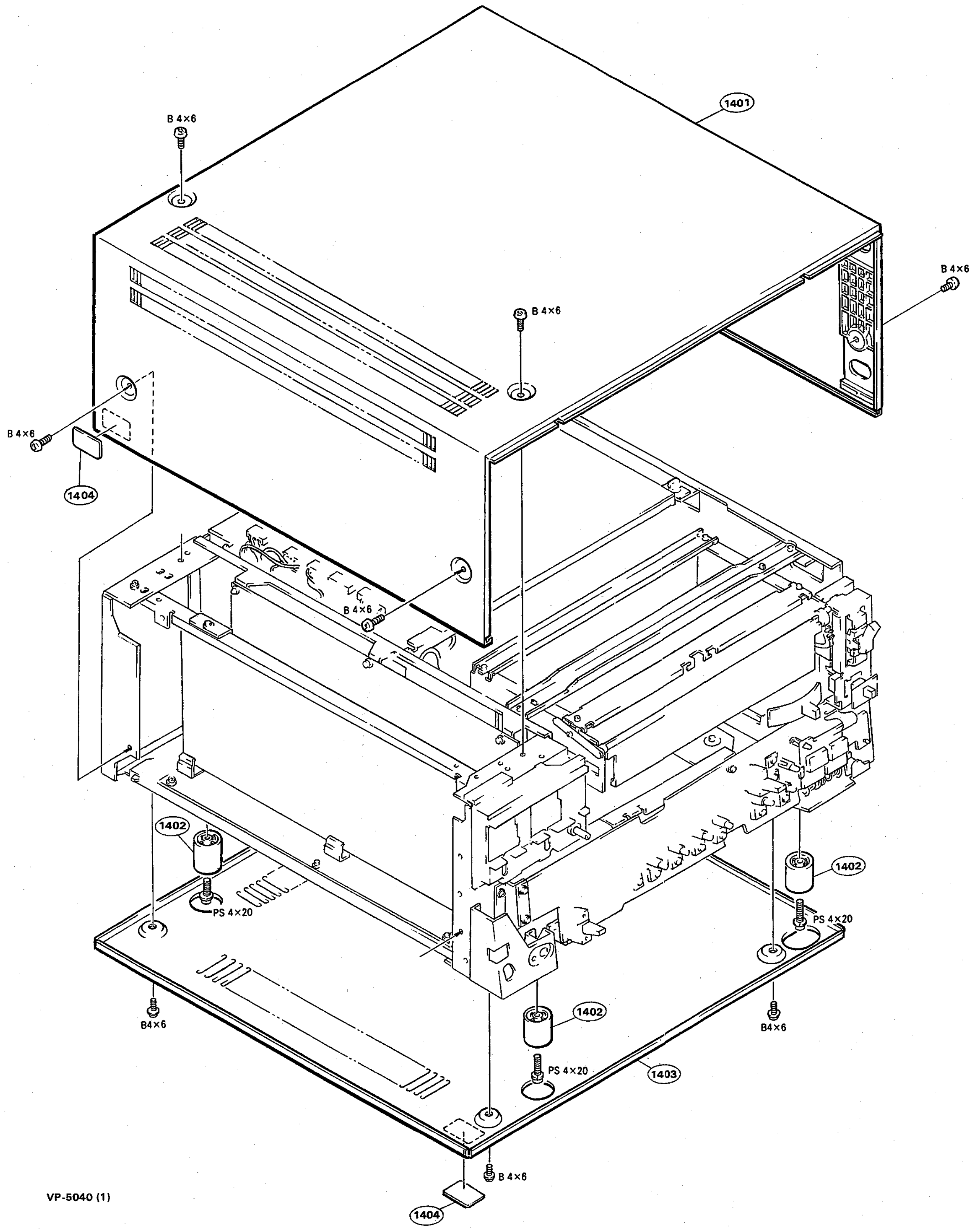
Rear Panel


1304
1310
1306
PWH 3×6
PWH 3×6
1309
1307
1302
1308
PWH 3×6
PWH 3×6
PWH 3×6
1311
1303
PWH 3×6
PWH 3×6
PWH 3×6
3×55
PWH 3×6
3×55
PWH 3×6
1305
1301

VP-5040 (1)

No.	Part No.	SP	Description
⚠1301	1-413-249-11	o	SWITCHING REGULATOR (UR-14E)
1302	1-618-590-21	o	PRINTED CIRCUIT BOARD, DC-24B
⚠1303	1-509-546-00	s	3P INLET
1304	1-555-977-00	s	CONNECTOR ASS'Y, DIN
1305	1-556-760-11	s	CORD, POWER
1306	1-560-403-00	o	CONNECTOR, PC BOARD
1307	1-618-591-21	o	PRINTED CIRCUIT BOARD, AC-65B
1308	3-667-811-00	o	LID, MD
1309	3-672-748-02	o	BRACKET, DC
1310	3-672-756-01	o	CASE, RF
1311	3-703-043-21	o	LABEL, CAUTION, MAIN

Ornamental Panel Block


B 4×6
1401
B 4×6
B 4×6
B 4×6
1404
B 4×6
1402
PS 4×20
1402
PS 4×20
B4×6
1402
B4×6
PS 4×20
1403
B 4×6
1404
VP-5040 (1)

No.	Part No.	SP	Description
1401	X-3672-719-1	o	CASE ASS'Y, U
1402	X-4839-902-0	s	LEG
1403	3-672-766-01	o	BOARD, BOTTOM
1404	3-703-079-21	o	LABEL, CAUTION (BACK)

15-3. ELECTRICAL PARTS LIST

ABBREVIATIONS

Ref. No.	Description	Ref. No.	Description	Ref. No.	Description
C□□, CT□□	CAPACITOR	IC□□	IC	Q□□	TRANSISTOR
CF□□	CERAMIC FILTER	J□□	JACK	R□□, RV□□	RESISTOR
CN□□	CONNECTOR	L□□	INDUCTOR	RY□□	RELAY
D□□	DIODE	M□□	MOTOR	S□□, SW□□	SWITCH
DL□□	DELAY LINE	ME□□	METER	SB□□	SOLAR BATTERY
F□□	FUSE	MIC□□	MICROPHONE	T□□	TRANSFORMER
FB□□	FERRITE BEAD	PG□□	PG COIL	TH□□	THERMISTOR
FL□□	FILTER	PL□□	LAMP	X□□	CRYSTAL
H□□	HEAD	PM□□	SOLENOIDE		

All capacitors are in micro farads unless otherwise specified.

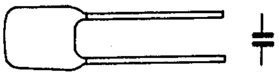
All inductors are in micro henries unless otherwise specified.

All resistors are in ohms.

Parts that are not listed in the "reference numbers order list" are shown in following table.
Reference numbers are omitted.

CAPACITOR

MYLAR CAPACITOR



0.00047μF through 0.22μF
±5% 50WV

Parts No. 1-130-□□□-00

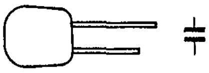
Value	Parts No. —□□□—
0.00047μF	467
0.00056	468
0.00068	469
0.00082	470
0.001	471
0.0012	472
0.0015	473
0.0018	474
0.0022	475
0.0027	476
0.0033	477

Value	Parts No. —□□□—
0.0039μF	478
0.0047	479
0.0056	480
0.0068	481
0.0082	482
0.01	483
0.012	484
0.015	485
0.018	486
0.022	487
0.027	488

Value	Parts No. —□□□—
0.033μF	489
0.039	490
0.047	491
0.056	492
0.068	493
0.082	494
0.1	495
0.12	496
0.15	497
0.18	498
0.22	499

SILVERED MICA CAPACITOR

1 pF through 620 pF
±5%, 50WV



Parts No. 1-107-□□□-00

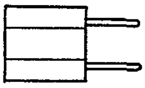
Value	Parts No. —□□□—
1 pF	098
2	099
3	100
4	101
5	102
6	103
7	104
8	105
9	106
10	061
11	062
12	063
13	064
15 pF	065
16	066
18	067
20	068
22	069
24	070
27	071
30	072
33	073
36	074
39	075
43	076
47	077
51 pF	078
56	079
62	080
68	081
75	082
82	083
91	084
100	085
110	086
120	087
130	088
150	089
160	090
180 pF	091
200	092
220	093
240	094
270	095
300	096
330	097
360	231
390	232
430	233
470	234
510	235
560	236
620	237

INDUCTOR

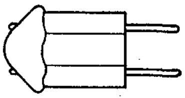
MICRO INDUCTOR

1 μH through 470 μH
±5%

-21



-00

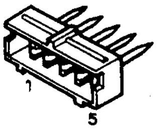


Parts No. 1-408-□□□-□□

Value	Parts No. —□□□—
1 μH	397
1.2	398
1.5	399
1.8	400
2.2	401
2.7	402
3.3	403
3.9	404
4.7 μH	405
5.6	406
6.8	407
8.2	408
10	409
12	410
15	411
18	412
22 μH	413
27	414
33	415
39	416
47	417
56	418
68	419
82	420
100 μH	421
120	422
150	423
180	424
220	425
270	426
330	427
390	428
470	429

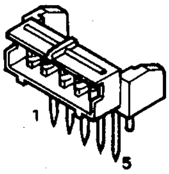
CONNECTOR

top-type receptacle



2P	
3P	1-506-726-11
4P	
5P	727-11
6P	728-11
7P	
8P	729-11
9P	
10P	732-11
11P	
12P	733-11

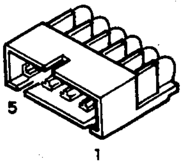
side-type receptacle



2P	
3P	1-506-734-11
4P	
5P	735-11
6P	
7P	736-11
8P	737-11
9P	
10P	738-11
11P	
12P	739-11

plug

housing



2P	
3P	1-563-242-11
4P	
5P	243-11
6P	244-11
7P	
8P	245-11
9P	
10P	246-11
11P	
12P	247-11

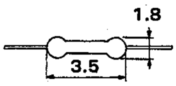
contact

1-563-240-21 (AGW22 ~ 26)
1-563-241-21 (AGW26 ~ 30)

RESISTOR

CARBON RESISTOR (1/6W)

±5%, 1/6W, non-special type
2.2Ω through 1MΩ



Parts No. 1-247-□□□-00

Value	Parts No. —□□□—
1Ω	–
1.1	–
1.2	–
1.3	–
1.5	–
1.6	–
1.8	–
2	–
2.2	767
2.4	768
2.7	769
3	770
3.3	771
3.6	772
3.9	773
4.3	774
4.7	775
5.1	776
5.6	777
6.2	778
6.8	779
7.5	780
8.2	781
9.1	782
10Ω	783
11	784
12	785
13	786
15	787
16	788
18	789
20	790
22	791
24	792
27	793
30	794
33	795

Value	Parts No. —□□□—
36Ω	796
39	797
43	798
47	799
51	800
56	801
62	802
68	803
75	804
82	805
91	806
100Ω	807
110	808
120	809
130	810
150	811
160	812
180	813
200	814
220	815
240	816
270	817
300	818
330	819
360	820
390	821
430	822
470	823
510	824
560	825
620	826
680	827
750	828
820	829
910	830
1kΩ	831
1.1	832

Value	Parts No. —□□□—
1.2kΩ	833
1.3	834
1.5	835
1.6	836
1.8	837
2	838
2.2	839
2.4	840
2.7	841
3	842
3.3	843
3.6	844
3.9	845
4.3	846
4.7	847
5.1	848
5.6	849
6.2	850
6.8	851
7.5	852
8.2	853
9.1	854
10kΩ	855
11	856
12	857
13	858
15	859
16	860
18	861
20	862
22	863
24	864
27	865
30	866
33	867
36	868
39	869

Value	Parts No. —□□□—
43kΩ	870
47	871
51	872
56	873
62	874
68	875
75	876
82	877
91	878
100kΩ	879
110	880
120	881
130	882
150	883
160	884
180	885
200	886
220	887
240	888
270	889
300	890
330	891
360	892
390	893
430	894
470	895
510	896
560	897
620	898
680	899
750	900
820	901
910	902
1MΩ	903

AC-65B BOARD

Ref.No.	Parts No.	SP	Description
	1-618-591-21	o	PRINTED CIRCUIT BOARD,AC-65B
	1-533-189-11	s	HOLDER,FUSE
C1	1-130-711-00	s	FILM 0.22 20% 250V
⚠CN1	1-506-371-00	o	2P PLUG (L)
	1-509-910-00	o	HOUSING,2P
	1-509-898-00	o	CONTACT
⚠F1	1-532-203-00	s	2A,250V
R1	1-244-945-00	s	CARBON 1M 5% 1/2W

AH-11 BOARD

Ref.No.	Parts No.	SP	Description
	1-618-602-11	o	PRINTED CIRCUIT BOARD,AH-11

CC-22 BOARD

Ref.No.	Parts No.	SP	Description
	1-618-536-11	o	PRINTED CIRCUIT BOARD,CC-22
R1	1-247-705-11	s	NF CARBON 270 5% 1/4W
R2	1-247-717-11	s	NF CARBON 2.2k 5% 1/4W
R3	1-247-705-11	s	NF CARBON 270 5% 1/4W
R4	1-247-717-11	s	NF CARBON 2.2k 5% 1/4W

CC-23 BOARD

Ref.No.	Parts No.	SP	Description
	1-618-537-11	o	PRINTED CIRCUIT BOARD,CC-23
IC1	8-719-104-42	s	PS4005-L

CC-24 BOARD

Ref.No.	Parts No.	SP	Description
	1-618-538-11	o	PRINTED CIRCUIT BOARD,CC-24
IC1	8-719-104-42	s	PS4005-L

DC-24B BOARD

Ref.No.	Parts No.	SP	Description
	1-618-590-21	o	PRINTED CIRCUIT BOARD,DC-24B
	1-533-189-11	s	HOLDER, FUSE
⚠F1	1-532-237-00	s	3.15A,250V
F2	1-532-286-00	s	2.5A,250V

EC-23 BOARD

Ref.No.	Parts No.	SP	Description
	1-618-535-11	o	PRINTED CIRCUIT BOARD,EC-23

KY-91B BOARD

Ref.No.	Parts No.	SP	Description
	A-6717-434-A	o	MOUNTED CIRCUIT BOARD,KY-91B
C1	1-161-059-00	s	CERAMIC 0.047 10% 50V
C3	1-161-059-00	s	CERAMIC 0.047 10% 50V
C4	1-124-892-11	s	ELECT 47 20% 10V
C5	1-124-892-11	s	ELECT 47 20% 10V
C6	1-161-059-00	s	CERAMIC 0.047 10% 50V
C7	1-124-892-11	s	ELECT 47 20% 10V
C8	1-124-443-00	s	ELECT 100 20% 10V
C9	1-124-443-00	s	ELECT 100 20% 10V
C10	1-162-211-31	s	CERAMIC 33PF 5% 50V
C11	1-162-211-31	s	CERAMIC 33PF 5% 50V
CN701	1-807-441-11	s	BLOCK,DISPLAY(A)
D1	8-719-904-55	s	GL-5HD5
D2	8-719-911-19	s	1SS119
D3	8-719-911-19	s	1SS119
D5	8-719-911-19	s	1SS119
D6	8-719-911-19	s	1SS119
D7	8-719-911-19	s	1SS119
D9	8-719-911-19	s	1SS119
D10	8-719-911-19	s	1SS119
D11	8-719-911-19	s	1SS119
D12	8-719-911-19	s	1SS119
D13	8-719-911-19	s	1SS119
D14	8-719-911-19	s	1SS119
D16	8-719-911-19	s	1SS119
D17	8-719-911-19	s	1SS119
D20	8-719-904-55	s	GL-5HD5
D21	8-719-904-55	s	GL-5HD5
D22	8-719-904-55	s	GL-5HD5
D23	8-719-905-54	s	EBG5504S
D24	8-719-904-55	s	GL-5HD5
D25	8-719-904-55	s	GL-5HD5

Ref.No.	Parts No.	SP	Description
D28	8-719-905-55	s	EAA5504S
D29	8-719-905-55	s	EAA5504S
D32	8-719-911-19	s	1SS119
D33	8-719-911-19	s	1SS119
IC1	8-759-927-42	s	MB8851H-1015M(FUJITSU)
IC2	8-759-987-47	s	MB8747(FUJITSU)
IC3	8-759-645-16	s	M54516P(MITSUBISHI)
L1	1-407-488-00	s	MICRO 470
Q1	8-729-117-54	s	2SA1175
Q2	8-729-117-54	s	2SA1175
Q3	8-729-117-54	s	2SA1175
Q4	8-729-117-54	s	2SA1175
Q5	8-729-117-54	s	2SA1175
Q6	8-729-117-54	s	2SA1175
Q7	8-729-117-54	s	2SA1175
Q8	8-729-117-54	s	2SA1175
Q9	8-729-900-67	s	DTA124XS
Q10	8-729-900-67	s	DTA124XS
Q11	8-729-900-67	s	DTA124XS
Q12	8-729-900-67	s	DTA124XS
Q13	8-729-900-89	s	DTC144ES
Q14	8-729-900-89	s	DTC144ES
Q15	8-729-900-89	s	DTC144ES
Q16	8-729-900-89	s	DTC144ES
Q17	8-729-900-89	s	DTC144ES
Q18	8-729-900-89	s	DTC144ES
Q19	8-729-900-89	s	DTC144ES
Q21	8-729-900-89	s	DTC144ES
S1	1-552-539-00	s	KEY "STOP"
S2	1-552-539-00	s	KEY "PLAY"
S4	1-553-739-21	s	KEY "MARK IN A"
S5	1-552-539-00	s	KEY "EJECT"
S6	1-552-539-00	s	KEY "PAUSE"
S8	1-553-739-21	s	KEY "MARK IN B"
S9	1-552-539-00	s	KEY "REW"
S10	1-552-539-00	s	KEY "SEARCH FWD"
S11	1-553-739-21	s	KEY "RESET"
S12	1-552-539-00	s	KEY "F FWD"
S13	1-552-539-00	s	KEY "SEARCH REV"
S17	1-516-963-00	s	LEVER SLIDE "AUDIO MONITOR"
S19	1-516-995-00	s	LEVER SLIDE "SYSTEM SELECT"
S20	1-516-995-00	s	LEVER SLIDE "PROGRAMMED OPERATION"
X1	1-527-992-11	s	CERAMIC,6MHz

Ref.No.	Parts No.	SP	Description
LM-13 BOARD			
	1-618-600-11	o	PRINTED CIRCUIT BOARD,LM-13
PD-29 BOARD			
⚠	A-6725-536-A	o	MOUNTED CIRCUIT BOARD,PD-29
C1	1-124-927-11	s	ELECT 4.7 20% 100V
C2	1-124-927-11	s	ELECT 4.7 20% 100V
C3	1-124-927-11	s	ELECT 4.7 20% 100V
C4	1-124-927-11	s	ELECT 4.7 20% 100V
D1	8-719-200-02	s	10E-2
D2	8-719-200-02	s	10E-2
D3	8-719-200-02	s	10E-2
D4	8-719-200-02	s	10E-2
D5	8-719-200-02	s	10E-2
D6	8-719-200-02	s	10E-2
D7	8-719-200-02	s	10E-2
D8	8-719-200-02	s	10E-2
D9	8-719-200-02	s	10E-2
D10	8-719-200-02	s	10E-2
D11	8-719-200-02	s	10E-2
D12	8-719-200-02	s	10E-2
D13	8-719-200-02	s	10E-2
Q1	8-729-811-11	s	2SD1111
Q2	8-729-178-54	s	2SC2785
Q3	8-729-889-40	s	2SD894
Q4	8-729-811-11	s	2SD1111
Q5	8-729-178-54	s	2SC2785
Q6	8-729-889-40	s	2SD894
Q7	8-729-889-40	s	2SD894
Q8	8-729-811-11	s	2SD1111
Q9	8-729-178-54	s	2SC2785
Q10	8-729-889-40	s	2SD894
Q11	8-729-811-11	s	2SD1111
Q12	8-729-178-54	s	2SC2785
Q13	8-729-178-54	s	2SC2785
Q14	8-729-889-40	s	2SD894
⚠ R6	1-249-382-11	s	CARBON 1.2 5% 1/6W
R12	1-249-382-11	s	CARBON 1.2 5% 1/6W
R19	1-249-382-11	s	CARBON 1.2 5% 1/6W
R25	1-249-382-11	s	CARBON 1.2 5% 1/6W

PD-30 BOARD

Ref.No.	Parts No.	SP	Description
	⚠ A-6725-537-A	o	MOUNTED CIRCUIT BOARD,PD-30
C1	1-124-927-11	s	ELECT 4.7 20% 100V
C2	1-124-927-11	s	ELECT 4.7 20% 100V
D1	8-719-200-02	s	10E-2
D2	8-719-200-02	s	10E-2
D3	8-719-200-02	s	10E-2
D4	8-719-200-02	s	10E-2
D5	8-719-200-02	s	10E-2
D6	8-719-200-02	s	10E-2
Q1	8-729-811-11	s	2SD1111
Q2	8-729-178-54	s	2SC2785
Q3	8-729-889-40	s	2SD894
Q4	8-729-811-11	s	2SD1111
Q5	8-729-178-54	s	2SC2785
Q6	8-729-889-40	s	2SD894
⚠ R6	1-249-382-11	s	CARBON 1.2 5% 1/6W
R12	1-249-382-11	s	CARBON 1.2 5% 1/6W

PH-5 BOARD

Ref.No.	Parts No.	SP	Description
	1-603-737-11	o	PRINTED CIRCUIT BOARD,PH-5
D1	8-719-951-04	s	BR5104S
Q1	8-729-810-22	s	SPS102

PT-9 BOARD

Ref.No.	Parts No.	SP	Description
	1-605-018-11	o	PRINTED CIRCUIT BOARD,PT-9
Q1	8-729-377-13	s	2SA771-Y

PTC-16 BOARD

Ref.No.	Parts No.	SP	Description
	1-618-598-11	o	PRINTED CIRCUIT BOARD,PTC-16
IC1	8-719-104-42	s	PS4005-L

PTC-17 BOARD

Ref.No.	Parts No.	SP	Description
	1-618-872-11	o	PRINTED CIRCUIT BOARD,PTC-17
D1	8-719-104-42	s	PS4005-L
D2	8-719-104-42	s	PS4005-L

RM-39 BOARD

Ref.No.	Parts No.	SP	Description
	1-618-873-11	o	PRINTED CIRCUIT BOARD,RM-39
C1	1-101-006-21	s	CERAMIC 0.047 50V
C2	1-101-006-21	s	CERAMIC 0.047 50V
L1	1-410-623-11	s	4.7
L2	1-410-623-11	s	4.7

SE-46 BOARD

Ref.No.	Parts No.	SP	Description
	1-618-599-11	o	PRINTED CIRCUIT BOARD,SE-46
PC1	1-806-232-21	s	TENSION REG. DET.MB-1102/S.N

SV-74B BOARD

Ref.No.	Parts No.	SP	Description
	⚠ A-6715-324-A	o	MOUNTED CIRCUIT BOARD,SV-74B
C3	1-124-903-00	s	ELECT 1 20% 50V
C4	1-124-896-00	s	ELECT 33 20% 16V
C6	1-162-304-31	s	CERAMIC 0.0047 20% 16V
C7	1-162-301-31	s	CERAMIC 0.0015 20% 16V
C9	1-124-904-00	s	ELECT 2.2 20% 50V
C10	1-131-352-00	s	TANTALUM 6.8 20% 35V
C12	1-162-305-31	s	CERAMIC 0.0068 20% 16V
C13	1-124-896-00	s	ELECT 33 20% 16V
C14	1-161-059-00	s	CERAMIC 0.047 10% 50V
C16	1-124-480-11	s	ELECT 470 20% 25V
C17	1-161-057-00	s	CERAMIC 0.033 10% 50V
C18	1-161-013-00	s	CERAMIC 0.01 10% 25V
C101	1-124-902-00	s	ELECT 0.47 20% 50V
C104	1-162-215-31	s	CERAMIC 47PF 5% 50V
C106	1-161-047-00	s	CERAMIC 0.0047 10% 50V
C107	1-123-332-00	s	ELECT 47 20% 25V
C108	1-124-907-00	s	ELECT 10 20% 50V
C109	1-124-483-00	s	ELECT 47 20% 35V
C110	1-124-483-00	s	ELECT 47 20% 35V
C111	1-161-042-00	s	CERAMIC 0.0018 10% 50V

Ref.No.	Parts No.	SP	Description
C112	1-161-042-00	s	CERAMIC 0.0018 10% 50V
C116	1-162-286-31	s	CERAMIC 220PF 10% 50V
C203	1-162-211-31	s	CERAMIC 33PF 5% 50V
C204	1-162-211-31	s	CERAMIC 33PF 5% 50V
C301	1-161-013-00	s	CERAMIC 0.01 10% 25V
C302	1-161-040-00	s	CERAMIC 0.0012 10% 50V
C304	1-124-481-11	s	ELECT 22 20% 35V
C305	1-124-481-11	s	ELECT 22 20% 35V
C306	1-162-286-31	s	CERAMIC 220PF 10% 50V
C307	1-162-288-31	s	CERAMIC 330PF 10% 50V
C308	1-162-306-31	s	CERAMIC 0.01 20% 16V
C309	1-162-306-31	s	CERAMIC 0.01 20% 16V
C312	1-124-903-00	s	ELECT 1 20% 50V
C402	1-124-902-00	s	ELECT 0.47 20% 50V
C404	1-124-902-00	s	ELECT 0.47 20% 50V
C406	1-124-902-00	s	ELECT 0.47 20% 50V
C408	1-124-443-00	s	ELECT 100 20% 10V
C409	1-162-306-31	s	CERAMIC 0.01 20% 16V
C410	1-162-306-31	s	CERAMIC 0.01 20% 16V
C411	1-162-207-31	s	CERAMIC 22PF 5% 50V
C412	1-162-282-31	s	CERAMIC 100PF 10% 50V
C413	1-162-284-31	s	CERAMIC 150PF 10% 50V
C414	1-123-332-00	s	ELECT 47 20% 25V
C415	1-124-896-00	s	ELECT 33 20% 16V
C418	1-162-282-31	s	CERAMIC 100PF 10% 50V
C422	1-123-608-00	s	ELECT 0.22 20% 50V
C423	1-162-289-31	s	CERAMIC 390PF 10% 50V
C424	1-124-907-00	s	ELECT 10 20% 50V
C425	1-124-904-00	s	ELECT 2.2 20% 50V
C426	1-124-904-00	s	ELECT 2.2 20% 50V
C429	1-124-471-00	s	ELECT 1000 20% 6.3V
C430	1-123-607-00	s	ELECT 0.1 20% 50V
C432	1-124-445-00	s	ELECT 100 20% 16V
C701	1-123-332-00	s	ELECT 47 20% 25V
C702	1-162-306-31	s	CERAMIC 0.01 20% 16V
C703	1-162-306-31	s	CERAMIC 0.01 20% 16V
C704	1-162-306-31	s	CERAMIC 0.01 20% 16V
C705	1-162-306-31	s	CERAMIC 0.01 20% 16V
C706	1-124-119-00	s	ELECT 330 20% 16V
C707	1-123-332-00	s	ELECT 47 20% 25V
C709	1-162-306-31	s	CERAMIC 0.01 20% 16V
C711	1-162-306-31	s	CERAMIC 0.01 20% 16V
C712	1-162-306-31	s	CERAMIC 0.01 20% 16V
C714	1-162-306-31	s	CERAMIC 0.01 20% 16V
C716	1-162-306-31	s	CERAMIC 0.01 20% 16V
C717	1-123-332-00	s	ELECT 47 20% 25V
C718	1-162-306-31	s	CERAMIC 0.01 20% 16V
C719	1-161-039-00	s	CERAMIC 0.001 10% 50V
D1	8-719-911-19	s	1SS119
D2	8-719-911-19	s	1SS119
D3	8-719-911-19	s	1SS119
D4	8-719-911-19	s	1SS119
D5	8-719-911-19	s	1SS119
D6	8-719-911-19	s	1SS119
D7	8-719-911-55	s	U05G
D101	8-719-911-19	s	1SS119
D103	8-719-911-19	s	1SS119
D104	8-719-911-19	s	1SS119

Ref.No.	Parts No.	SP	Description
D105	8-719-911-19	s	1SS119
D106	8-719-911-19	s	1SS119
D107	8-719-911-19	s	1SS119
D108	8-719-911-19	s	1SS119
D109	8-719-911-19	s	1SS119
D110	8-719-911-19	s	1SS119
D111	8-719-911-19	s	1SS119
D112	8-719-911-19	s	1SS119
D201	8-719-911-19	s	1SS119
D203	8-719-911-19	s	1SS119
D204	8-719-911-19	s	1SS119
D205	8-719-911-19	s	1SS119
D303	8-719-911-19	s	1SS119
D401	8-719-911-19	s	1SS119
D402	8-719-911-19	s	1SS119
D405	8-719-911-19	s	1SS119
D406	8-719-911-19	s	1SS119
D407	8-719-911-19	s	1SS119
D408	8-719-911-19	s	1SS119
D409	8-719-911-19	s	1SS119
D410	8-719-911-19	s	1SS119
D411	8-719-911-19	s	1SS119
IC1	8-759-132-40	s	uPC324C(NEC)
IC2	8-759-700-08	s	NJM4558S(JRC)
IC3	8-759-705-58	s	NJM4558D-D(JRC)
IC5	8-759-240-53	s	TC4053BP(TOSHIBA)
IC6	8-759-240-53	s	TC4053BP(TOSHIBA)
IC7	8-759-240-71	s	TC4071PB(TOSHIBA)
IC8	8-759-132-40	s	uPC324C(NEC)
IC9	8-759-132-40	s	uPC324C(NEC)
IC10	8-759-133-90	s	uPC339C(NEC)
IC11	8-759-240-30	s	TC4030BP(TOSHIBA)
IC12	8-759-145-58	s	uPC4558C(NEC)
IC13	8-759-240-53	s	TC4053BP(TOSHIBA)
IC14	8-759-205-76	s	TC504013BP (TOSHIBA)
IC15	8-759-200-01	s	TC4001UBP(TOSHIBA)
IC17	8-751-941-05	s	CX194B-5(SONY)
IC18	8-759-929-59	s	MB88505-441M(FUJITSU)
IC19	8-759-240-30	s	TC4030BP(TOSHIBA)
IC20	8-759-240-53	s	TC4053BP(TOSHIBA)
Q1	8-729-178-54	s	2SC2785
Q3	8-729-376-84	s	2SA768-G
Q4	8-729-178-54	s	2SC2785
Q5	8-729-113-32	s	2SB733
Q101	8-729-900-83	s	DTC124XS
Q102	8-729-178-54	s	2SC2785
Q103	8-729-900-83	s	DTC124XS
Q104	8-729-117-54	s	2SA1175
Q105	8-729-178-54	s	2SC2785
Q106	8-729-178-54	s	2SC2785
Q107	8-729-105-72	s	2SK523-L1
Q108	8-729-900-83	s	DTC124XS
Q109	8-729-900-83	s	DTC124XS
Q110	8-729-178-54	s	2SC2785
Q111	8-729-288-02	s	2SD880
Q112	8-729-113-32	s	2SB733
Q201	8-729-900-83	s	DTC124XS
Q202	8-729-900-83	s	DTC124XS
Q203	8-729-900-83	s	DTC124XS
Q204	8-729-900-83	s	DTC124XS

Ref.No.	Parts No.	SP	Description
Q205	8-729-900-83	s	DTC124XS
Q206	8-729-900-83	s	DTC124XS
Q304	8-729-178-54	s	2SC2785
Q401	8-729-178-54	s	2SC2785
Q403	8-729-178-54	s	2SC2785
Q404	8-729-178-54	s	2SC2785
Q408	8-729-603-50	s	2SC403SP
Q411	8-729-178-54	s	2SC2785
Q412	8-729-178-54	s	2SC2785
⚠ R42	1-207-621-00	s	WIREWOUND 1.5 10% 3W
R102	1-215-443-00	s	METAL 8.2k 1% 1/6W
R103	1-215-453-00	s	METAL 22k 1% 1/6W
R145	1-215-461-00	s	METAL 47k 1% 1/6W
R146	1-215-461-00	s	METAL 47k 1% 1/6W
R164	1-215-391-00	s	METAL 56 1% 1/6W
R218	1-215-493-00	s	METAL 1M 1% 1/6W
R235	1-215-449-00	s	METAL 15k 1% 1/6W
R236	1-215-456-00	s	METAL 30k 1% 1/6W
R237	1-215-464-00	s	METAL 62k 1% 1/6W
R238	1-215-471-00	s	METAL 120k 1% 1/6W
R239	1-215-478-00	s	METAL 240k 1% 1/6W
R240	1-215-486-00	s	METAL 510k 1% 1/6W
R241	1-215-493-00	s	METAL 1M 1% 1/6W
R242	1-215-493-00	s	METAL 1M 1% 1/6W
R414	1-247-226-00	s	NF CARBON 270 5% 1/2W
⚠ R461	1-207-636-00	s	WIREWOUND 100 10% 3W
RV1	1-228-994-00	s	VAR, METAL GLAZE 10k
RV2	1-228-990-00	s	VAR, METAL GLAZE 1k
RV3	1-228-990-00	s	VAR, METAL GLAZE 1k
RV100	1-228-993-00	s	VAR, METAL GLAZE 4.7k
RV101	1-228-994-00	s	VAR, METAL GLAZE 10k
RV102	1-228-994-00	s	VAR, METAL GLAZE 10k
RV105	1-228-993-00	s	VAR, METAL GLAZE 4.7k
RV106	1-228-993-00	s	VAR, METAL GLAZE 4.7k
RV107	1-228-995-00	s	VAR, METAL GLAZE 22k
RV201	1-228-990-00	s	VAR, METAL GLAZE 1k
RV401	1-228-996-00	s	VAR, METAL GLAZE 47k
RV402	1-228-996-00	s	VAR, METAL GLAZE 47k
RV403	1-228-996-00	s	VAR, METAL GLAZE 47k
RV404	1-228-996-00	s	VAR, METAL GLAZE 47k
RV405	1-228-996-00	s	VAR, METAL GLAZE 47k
RV406	1-228-997-00	s	VAR, METAL GLAZE 100k
RV407	1-228-997-00	s	VAR, METAL GLAZE 100k
X1	1-527-376-00	s	CRYSTAL,3.579545MHz
X2	1-527-734-00	s	CRYSTAL,6MHz

SW-50 BOARD

Ref.No.	Parts No.	SP	Description
	1-603-435-00	o	PRINTED CIRCUIT BOARD,SW-50
IC1	8-719-104-42	s	PS4005-L

SY-51 BOARD

Ref.No.	Parts No.	SP	Description
⚠	A-6717-433-A	o	MOUNTED CIRCUIT BOARD,SY-51
C1	1-125-393-11	s	DOUBLE LAYERS 0.47F 30% 5.5V
C2	1-161-059-00	s	CERAMIC 0.047 10% 50V
C3	1-161-013-00	s	CERAMIC 0.01 10% 25V
C4	1-161-041-00	s	CERAMIC 0.0015 10% 50V
C5	1-161-013-00	s	CERAMIC 0.01 10% 25V
C6	1-161-055-00	s	CERAMIC 0.022 10% 50V
C7	1-124-481-11	s	ELECT 22 20% 35V
C8	1-124-481-11	s	ELECT 22 20% 35V
C9	1-124-445-00	s	ELECT 100 20% 16V
C10	1-162-286-31	s	CERAMIC 220PF 10% 50V
C11	1-124-903-00	s	ELECT 1 20% 50V
C12	1-123-332-00	s	ELECT 47 20% 25V
C13	1-124-445-00	s	ELECT 100 20% 16V
C14	1-162-286-31	s	CERAMIC 220PF 10% 50V
C15	1-161-058-00	s	CERAMIC 0.039 10% 50V
C17	1-124-903-00	s	ELECT 1 20% 50V
C18	1-131-358-00	s	TANTALUM 6.8 20% 25V
C19	1-161-013-00	s	CERAMIC 0.01 10% 25V
C20	1-161-057-00	s	CERAMIC 0.033 10% 50V
C21	1-161-013-00	s	CERAMIC 0.01 10% 25V
C22	1-162-216-31	s	CERAMIC 51PF 5% 50V
C23	1-124-903-00	s	ELECT 1 20% 50V
C24	1-124-907-00	s	ELECT 10 20% 50V
C25	1-124-892-11	s	ELECT 47 20% 10V
C26	1-161-059-00	s	CERAMIC 0.047 10% 50V
C27	1-123-332-00	s	ELECT 47 20% 25V
C28	1-124-892-11	s	ELECT 47 20% 10V
C29	1-124-445-00	s	ELECT 100 20% 16V
C30	1-124-903-00	s	ELECT 1 20% 50V
C31	1-161-039-00	s	CERAMIC 0.001 10% 50V
C32	1-162-221-31	s	CERAMIC 33PF 5% 50V
C33	1-161-059-00	s	CERAMIC 0.047 10% 50V
C34	1-161-039-00	s	CERAMIC 0.001 10% 50V
C35	1-124-892-11	s	ELECT 47 20% 10V
C36	1-161-059-00	s	CERAMIC 0.047 10% 50V
C37	1-162-211-31	s	CERAMIC 33PF 5% 50V
C38	1-161-055-00	s	CERAMIC 0.022 10% 50V
C40	1-124-445-00	s	ELECT 100 20% 16V
C41	1-124-892-11	s	ELECT 47 20% 10V
C42	1-161-059-00	s	CERAMIC 0.047 10% 50V
C43	1-124-445-00	s	ELECT 100 20% 16V
C44	1-124-445-00	s	ELECT 100 20% 16V
C45	1-124-444-00	s	ELECT 220 20% 10V
C46	1-162-290-31	s	CERAMIC 470PF 10% 50V
C47	1-162-211-31	s	CERAMIC 33PF 5% 50V
C48	1-162-211-31	s	CERAMIC 33PF 5% 50V
C49	1-124-903-00	s	ELECT 1 20% 50V
C50	1-124-903-00	s	ELECT 1 20% 50V
C51	1-124-892-11	s	ELECT 47 20% 10V
C53	1-124-905-11	s	ELECT 3.3 20% 50V
D1	8-719-911-19	s	1SS119
D2	8-719-911-19	s	1SS119
D3	8-719-911-19	s	1SS119
D4	8-719-911-19	s	1SS119
D5	8-719-911-19	s	1SS119

Ref.No.	Parts No.	SP	Description
D6	8-719-911-19	s	1SS119
D7	8-719-911-19	s	1SS119
D8	8-719-911-19	s	1SS119
D9	8-719-911-19	s	1SS119
D10	8-719-911-19	s	1SS119
D11	8-719-911-19	s	1SS119
D12	8-719-911-19	s	1SS119
D13	8-719-911-19	s	1SS119
D14	8-719-911-19	s	1SS119
D15	8-719-911-19	s	1SS119
D16	8-719-911-19	s	1SS119
D17	8-719-911-19	s	1SS119
D18	8-719-911-19	s	1SS119
D20	8-719-911-19	s	1SS119
D21	8-719-911-55	s	U05G
D22	8-719-911-55	s	U05G
D23	8-719-911-55	s	U05G
D24	8-719-911-19	s	1SS119
D25	8-719-911-19	s	1SS119
D26	8-719-911-19	s	1SS119
D27	8-719-911-19	s	1SS119
D28	8-719-911-19	s	1SS119
IC1	8-759-145-58	s	uPC4558C(NEC)
IC2	8-759-145-58	s	uPC4558C(NEC)
IC3	8-759-345-38	s	HD14538BP(HITACHI)
IC4	8-759-135-80	s	uPC358C(NEC)
IC5	8-759-145-58	s	uPC4558C(NEC)
IC7	8-759-929-61	s	MB88521-144M(FUJITSU)
IC8	8-759-729-03	s	NJM2903D(JRC)
IC9	8-759-600-24	s	M54543L(MITSUBISHI)
IC10	8-759-600-24	s	M54543L(MITSUBISHI)
IC11	8-759-240-69	s	TC4069UBP(TOSHIBA)
IC12	8-759-929-60	s	MB88505-442M(FUJITSU)
IC13	8-759-220-00	s	TC40H000P(TOSHIBA)
IC14	8-759-913-99	s	MB88201-173N(FUJITSU)
IC15	8-759-729-03	s	NJM2903D(JRC)
IC18	8-759-240-69	s	TC4069UBP(TOSHIBA)
IC19	8-759-345-38	s	HD14538BP(HITACHI)
Q1	8-729-177-44	s	2SD774-5
Q3	8-729-889-40	s	2SD894
Q4	8-729-178-54	s	2SC2785
Q5	8-729-178-54	s	2SC2785
Q6	8-729-178-54	s	2SC2785
Q7	8-729-178-54	s	2SC2785
Q8	8-729-178-54	s	2SC2785
Q9	8-729-900-89	s	DTC144ES
Q10	8-729-117-54	s	2SA1175
Q11	8-729-900-89	s	DTC144ES
Q12	8-729-117-54	s	2SA1175
Q13	8-729-900-89	s	DTC144ES
Q14	8-729-900-89	s	DTC144ES
Q15	8-729-178-54	s	2SC2785
Q16	8-729-178-54	s	2SC2785
Q17	8-729-900-89	s	DTC144ES
Q18	8-729-900-89	s	DTC144ES
Q19	8-729-900-89	s	DTC144ES
Q20	8-729-178-54	s	2SC2785
Q23	8-729-900-89	s	DTC144ES

Ref.No.	Parts No.	SP	Description
Q24	8-729-900-89	s	DTC144ES
Q26	8-729-900-89	s	DTC144ES
Q27	8-729-178-54	s	2SC2785
Q28	8-729-117-54	s	2SA1175
Q29	8-729-178-54	s	2SC2785
Q31	8-729-178-54	s	2SC2785
Q35	8-729-382-64	s	2SC1826-G
Q36	8-729-900-89	s	DTC144ES
Q37	8-729-900-89	s	DTC144ES
Q38	8-729-900-89	s	DTC144ES
⚠ R11	1-207-674-00	s	WIREWOUND 4.7 10% 6W
R17	1-249-393-11	s	CARBON 10 5% 1/6W
R41	1-247-109-00	s	NF CARBON 120 5% 1/4W
R78	1-249-393-11	s	CARBON 10 5% 1/6W
R112	1-247-700-11	s	NF CARBON 100 5% 1/4W
R159	1-214-853-00	s	METAL 360 1% 1/2W
R160	1-214-852-00	s	METAL 330 1% 1/2W
R184	1-247-210-00	s	NF CARBON 56 5% 1/2W
R192	1-532-637-00	s	LINK,IC
R200	1-532-675-21	s	LINK,IC
RV1	1-230-722-11	s	VAR, CARBON 22k
RV2	1-230-720-11	s	VAR, CARBON 4.7k
RV3	1-230-720-11	s	VAR, CARBON 4.7k
RV4	1-230-722-11	s	VAR, CARBON 22k
SW1	1-552-509-00	s	DIP "MODE SELECT"
X1	1-567-143-00	s	CERAMIC,6MHz
X2	1-527-822-00	s	CERAMIC,4MHz

TG-22 BOARD

Ref.No.	Parts No.	SP	Description
	1-618-597-11	o	PRINTED CIRCUIT BOARD,TG-22
D1	8-719-904-55	s	GL-5HD5

UR-14E BOARD

Ref.No.	Parts No.	SP	Description
⚠	1-413-249-11	s	SWITCHING REGULATOR, UR-14E
⚠ C101	1-161-742-00	s	CERAMIC 2200PF 20% 400V
⚠ C102	1-161-742-00	s	CERAMIC 2200PF 20% 400V
C103	1-161-742-00	s	CERAMIC 2200PF 20% 400V
C104	1-161-742-00	s	CERAMIC 2200PF 20% 400V
C105	1-136-185-00	s	METALIZED 0.22 20% 250V

Ref.No.	Parts No.	SP	Description
⚠ C106	1-136-185-00	s	METALIZED 0.22 20% 250V
C107	1-161-742-00	s	CERAMIC 2200PF 20% 400V
C108	1-161-742-00	s	CERAMIC 2200PF 20% 400V
C109	1-124-961-11	s	ELECT 220 20% 200V
C110	1-124-023-00	s	ELECT 4.7 20% 350V
C111	1-124-023-00	s	ELECT 4.7 20% 350V
C112	1-124-549-00	s	ELECT 100 20% 10V
C113	1-124-961-11	s	ELECT 220 20% 200V
C114	1-124-549-00	s	ELECT 100 20% 10V
C201	1-106-351-00	s	MYLAR 0.0022 5% 200V
C202	1-106-351-00	s	MYLAR 0.0022 5% 200V
C203	1-161-825-11	s	CERAMIC 220PF 10% 500V
C204	1-161-825-11	s	CERAMIC 220PF 10% 500V
C205	1-161-825-11	s	CERAMIC 220PF 10% 500V
C206	1-161-825-11	s	CERAMIC 220PF 10% 500V
C207	1-123-357-00	s	ELECT 22 20% 50V
C209	1-106-351-00	s	MYLAR 0.0022 5% 200V
C210	1-136-153-00	s	METALIZED 0.01 5% 50V
C211	1-136-153-00	s	METALIZED 0.01 5% 50V
C212	1-124-556-11	s	ELECT 2200 20% 16V
C213	1-124-556-11	s	ELECT 2200 20% 16V
C214	1-124-556-11	s	ELECT 2200 20% 16V
C215	1-124-556-11	s	ELECT 2200 20% 16V
C216	1-123-326-00	s	ELECT 3300 20% 16V
C217	1-123-332-00	s	ELECT 47 20% 25V
C651	1-124-445-00	s	ELECT 100 20% 16V
C652	1-130-591-11	s	MYLAR 3300PF 2% 100V
C653	1-136-141-00	s	MYLAR 1000PF 10% 50V
C654	1-136-165-00	s	METALIZED 0.1 5% 50V
C655	1-123-318-00	s	ELECT 33 20% 16V
⚠ CN101	1-560-436-00	o	RECEPTACLE, 3P
	1-561-218-00	o	HOUSING, 3P
	1-561-432-00	o	CONTACT
CN201	1-560-438-00	o	RECEPTACLE, 5P
	1-561-424-11	o	HOUSING, 5P
	1-561-432-00	o	CONTACT
D101	8-719-300-63	s	LB156
D201	8-719-908-00	s	ESAC33-02CS
D202	8-719-908-00	s	ESAC33-02CS
D203	8-719-900-93	s	V09C
D204	8-719-900-93	s	V09C
D205	8-719-815-55	s	1S1555
D206	8-719-100-61	s	RD11EB2
D208	8-719-101-67	s	RD7.5EL2
D209	8-719-100-30	s	RD5.1EB2
D210	8-719-100-30	s	RD5.1EB2
D651	8-719-200-02	s	10E-2
D652	8-719-100-70	s	RD15EB1
D653	8-719-815-55	s	1S1555
FB101	1-543-060-00	s	
FB102	1-543-060-00	s	
FB201	1-543-060-00	s	
FB202	1-543-060-00	s	
FB203	1-543-060-00	s	
FB204	1-543-060-00	s	
FB205	1-543-060-00	s	
FB206	1-543-060-00	s	
FB207	1-543-060-00	s	
FB208	1-543-060-00	s	
IC651	8-759-937-59	s	MB3759(FUJITSU)
⚠ L101	1-421-824-11	s	LINE FILTER
L201	1-421-849-11	s	CHOKE, 2.4mH
L203	1-408-316-00	s	CHOKE
L204	1-421-850-11	s	CHOKE,12
L205	1-421-329-00	s	CHOKE
Q101	8-729-901-72	s	2SC3317
Q102	8-729-901-72	s	2SC3317
Q103	8-729-100-13	s	2SC2001
Q104	8-729-100-13	s	2SC2001
Q201	8-729-606-34	s	2SC2603-G
Q202	8-729-117-54	s	2SA1175-F
R101	1-214-947-00	s	METAL 2.7M 1% 1/2W
⚠ R102	1-205-636-11	s	CEMENT 3.3 5% 5W
R103	1-246-529-00	s	CARBON 220k 5% 1/4W
R104	1-246-529-00	s	CARBON 220k 5% 1/4W
⚠ R105	1-212-934-00	s	NF FUSE 1 5% 1/2W
R106	1-247-700-11	s	NF CARBON 100 5% 1/4W
R107	1-246-529-00	s	CARBON 220k 5% 1/4W
R108	1-246-529-00	s	CARBON 220k 5% 1/4W
⚠ R109	1-212-934-00	s	NF FUSE 1 5% 1/2W
R110	1-247-700-11	s	NF CARBON 100 5% 1/4W
R201	1-206-475-00	s	NF METAL 33 5% 2W
R202	1-535-369-00	s	SHUNT 0.02 2W
R203	1-213-151-00	s	NF METAL 4.7k 5% 1W
R204	1-247-713-11	s	NF CARBON 1k 5% 1/4W
R205	1-247-719-11	s	NF CARBON 3.3k 5% 1/4W
R206	1-249-455-11	s	NF CARBON 4.7k 5% 1/4W
R207	1-247-717-11	s	NF CARBON 2.2k 5% 1/4W
R208	1-247-123-00	s	NF CARBON 470 5% 1/4W
R209	1-247-704-11	s	NF CARBON 220 5% 1/4W
R212	1-244-857-00	s	CARBON 220 5% 1/2W
R651	1-249-425-11	s	NF CARBON 4.7k 5% 1/6W

Ref.No.	Parts No.	SP	Description
RV651	1-228-644-11	s	VAR, METAL 1k 0.3W
⚠ T101	1-448-423-11	s	CONVERTER
T102	1-437-120-00	s	DRIVE

VA-35B BOARD

Ref.No.	Parts No.	SP	Description
⚠	A-6711-755-A	o	MOUNTED CIRCUIT BOARD,VA-35B
C1	1-161-059-00	s	CERAMIC 0.047 10% 50V
C2	1-124-903-00	s	ELECT 1 20% 50V
C3	1-161-059-00	s	CERAMIC 0.047 10% 50V
C4	1-124-903-00	s	ELECT 1 20% 50V
C5	1-161-059-00	s	CERAMIC 0.047 10% 50V
C6	1-123-332-00	s	ELECT 47 20% 25V
C7	1-162-209-31	s	CERAMIC 27PF 5% 50V
C8	1-162-209-31	s	CERAMIC 27PF 5% 50V
C9	1-162-306-31	s	CERAMIC 0.01 20% 16V
C10	1-124-892-11	s	ELECT 47 20% 10V
C11	1-161-059-00	s	CERAMIC 0.047 10% 50V
C12	1-123-332-00	s	ELECT 47 20% 25V
C13	1-161-059-00	s	CERAMIC 0.047 10% 50V
C14	1-161-059-00	s	CERAMIC 0.047 10% 50V
C15	1-162-306-31	s	CERAMIC 0.01 20% 16V
C16	1-123-332-00	s	ELECT 47 20% 25V
C17	1-162-306-31	s	CERAMIC 0.01 20% 16V
C18	1-162-306-31	s	CERAMIC 0.01 20% 16V
C19	1-162-306-31	s	CERAMIC 0.01 20% 16V
C20	1-123-332-00	s	ELECT 47 20% 25V
C21	1-162-288-31	s	CERAMIC 330PF 10% 50V
C22	1-162-282-31	s	CERAMIC 100PF 10% 50V
C23	1-162-306-31	s	CERAMIC 0.01 20% 16V
C24	1-161-059-00	s	CERAMIC 0.047 10% 50V
C25	1-162-306-31	s	CERAMIC 0.01 20% 16V
C28	1-161-059-00	s	CERAMIC 0.047 10% 50V
C29	1-161-055-00	s	CERAMIC 0.022 10% 50V
C30	1-161-059-00	s	CERAMIC 0.047 10% 50V
C31	1-162-306-31	s	CERAMIC 0.01 20% 16V
C32	1-124-892-11	s	ELECT 47 20% 10V
C33	1-161-059-00	s	CERAMIC 0.047 10% 50V
C34	1-162-306-31	s	CERAMIC 0.01 20% 16V
C35	1-162-306-31	s	CERAMIC 0.01 20% 16V
C36	1-123-332-00	s	ELECT 47 20% 25V
C101	1-162-306-31	s	CERAMIC 0.01 20% 16V
C102	1-162-283-31	s	CERAMIC 120PF 10% 50V
C104	1-124-443-00	s	ELECT 100 20% 10V
C107	1-162-213-31	s	CERAMIC 39PF 5% 50V
C109	1-124-444-00	s	ELECT 220 20% 10V
C110	1-123-332-00	s	ELECT 47 20% 25V
C111	1-161-059-00	s	CERAMIC 0.047 10% 50V
C112	1-124-470-11	s	ELECT 470 20% 6.3V
C113	1-162-284-31	s	CERAMIC 150PF 10% 50V
C114	1-162-306-31	s	CERAMIC 0.01 20% 16V
C115	1-161-059-00	s	CERAMIC 0.047 10% 50V
C116	1-124-443-00	s	ELECT 100 20% 10V
C117	1-124-443-00	s	ELECT 100 20% 10V
C118	1-162-209-31	s	CERAMIC 27PF 5% 50V
C119	1-124-907-00	s	ELECT 10 20% 50V
C120	1-124-892-11	s	ELECT 47 20% 10V
C121	1-124-892-11	s	ELECT 47 20% 10V
C123	1-161-055-00	s	CERAMIC 0.022 10% 50V
C124	1-162-215-31	s	CERAMIC 47PF 5% 50V
C125	1-124-892-11	s	ELECT 47 20% 10V
C126	1-124-907-00	s	ELECT 10 20% 50V
C127	1-124-907-00	s	ELECT 10 20% 50V
C128	1-162-306-31	s	CERAMIC 0.01 20% 16V
C129	1-161-059-00	s	CERAMIC 0.047 10% 50V
C130	1-123-332-00	s	ELECT 47 20% 25V
C131	1-161-059-00	s	CERAMIC 0.047 10% 50V
C132	1-123-332-00	s	ELECT 47 20% 25V
C133	1-161-059-00	s	CERAMIC 0.047 10% 50V
C134	1-123-332-00	s	ELECT 47 20% 25V
C135	1-124-896-00	s	ELECT 33 20% 16V
C136	1-124-473-11	s	ELECT 1000 20% 10V
C137	1-124-473-11	s	ELECT 1000 20% 10V
C138	1-123-332-00	s	ELECT 47 20% 25V
C139	1-162-205-31	s	CERAMIC 18PF 5% 50V
C202	1-162-306-31	s	CERAMIC 0.01 20% 16V
C204	1-161-059-00	s	CERAMIC 0.047 10% 50V
C205	1-123-332-00	s	ELECT 47 20% 25V
C206	1-161-059-00	s	CERAMIC 0.047 10% 50V
C207	1-123-332-00	s	ELECT 47 20% 25V
C208	1-162-306-31	s	CERAMIC 0.01 20% 16V
C209	1-162-306-31	s	CERAMIC 0.01 20% 16V
C210	1-161-059-00	s	CERAMIC 0.047 10% 50V
C211	1-123-332-00	s	ELECT 47 20% 25V
C212	1-124-481-11	s	ELECT 22 20% 35V
C213	1-124-443-00	s	ELECT 100 20% 10V
C214	1-124-443-00	s	ELECT 100 20% 10V
C215	1-161-059-00	s	CERAMIC 0.047 10% 50V
C216	1-124-907-00	s	ELECT 10 20% 50V
C217	1-124-907-00	s	ELECT 10 20% 50V
C218	1-162-282-31	s	CERAMIC 100PF 10% 50V
C219	1-131-344-00	s	ELECT(SOLID) 0.33 20% 35V
C222	1-124-443-00	s	ELECT 100 20% 10V
C223	1-162-294-31	s	CERAMIC 0.001 10% 50V
C224	1-131-344-00	s	ELECT(SOLID) 0.33 20% 35V
C225	1-124-907-00	s	ELECT 10 20% 50V
C226	1-161-059-00	s	CERAMIC 0.047 10% 50V
C227	1-123-332-00	s	ELECT 47 20% 25V
C228	1-162-281-31	s	CERAMIC 91PF 10% 50V
C232	1-124-927-11	s	ELECT 4.7 20% 100V
C233	1-162-306-31	s	CERAMIC 0.01 20% 16V
C234	1-162-282-31	s	CERAMIC 100 10% 50V
C235	1-161-059-00	s	CERAMIC 0.047 10% 50V
C236	1-123-332-00	s	ELECT 47 20% 25V
C237	1-161-059-00	s	CERAMIC 0.047 10% 50V
C238	1-123-332-00	s	ELECT 47 20% 25V
C239	1-162-306-31	s	CERAMIC 0.01 20% 16V
C240	1-124-907-00	s	ELECT 10 20% 50V
C241	1-162-290-31	s	CERAMIC 470PF 10% 50V
C242	1-162-292-31	s	CERAMIC 680PF 10% 50V
C243	1-162-290-31	s	CERAMIC 470PF 10% 50V
C245	1-162-306-31	s	CERAMIC 0.01 20% 16V
C249	1-131-404-00	s	ELECT(SOLID) 0.22 20% 35V
C250	1-161-059-00	s	CERAMIC 0.047 10% 50V

Ref.No.	Parts No.	SP	Description
C251	1-123-332-00	s	ELECT 47 20% 25V
C252	1-162-282-31	s	CERAMIC 100PF 10% 50V
C253	1-124-904-00	s	ELECT 2.2 20% 50V
C254	1-124-903-00	s	ELECT 1 20% 50V
C255	1-161-059-00	s	CERAMIC 0.047 10% 50V
C256	1-161-059-00	s	CERAMIC 0.047 10% 50V
C257	1-162-203-31	s	CERAMIC 15PF 5% 50V
C259	1-131-361-00	s	TANTALUM 2.2 20% 20V
C260	1-124-481-11	s	ELECT 22 20% 35V
C261	1-124-905-11	s	ELECT 3.3 20% 50V
C262	1-124-481-11	s	ELECT 22 20% 35V
C263	1-161-059-00	s	CERAMIC 0.047 10% 50V
C264	1-124-905-11	s	ELECT 3.3 20% 50V
C265	1-161-059-00	s	CERAMIC 0.047 10% 50V
C301	1-123-332-00	s	ELECT 47 20% 25V
C302	1-124-445-00	s	ELECT 100 20% 16V
C303	1-162-306-31	s	CERAMIC 0.01 20% 16V
C304	1-162-306-31	s	CERAMIC 0.01 20% 16V
C305	1-161-059-00	s	CERAMIC 0.047 10% 50V
C306	1-123-332-00	s	ELECT 47 20% 25V
C308	1-161-059-00	s	CERAMIC 0.047 10% 50V
C309	1-123-332-00	s	ELECT 47 20% 25V
C310	1-162-306-31	s	CERAMIC 0.01 20% 16V
C311	1-162-206-31	s	CERAMIC 20PF 5% 50V
C312	1-162-218-31	s	CERAMIC 62PF 5% 50V
C313	1-162-282-31	s	CERAMIC 100PF 10% 50V
C314	1-162-205-31	s	CERAMIC 18PF 5% 50V
C317	1-162-281-31	s	CERAMIC 91PF 10% 50V
C318	1-162-306-31	s	CERAMIC 0.01 20% 16V
C319	1-124-892-11	s	ELECT 47 20% 10V
C320	1-162-306-31	s	CERAMIC 0.01 20% 16V
C321	1-124-445-00	s	ELECT 100 20% 16V
C322	1-124-892-11	s	ELECT 47 20% 10V
C901	1-162-290-31	s	CERAMIC 470PF 10% 50V
C902	1-162-290-31	s	CERAMIC 470PF 10% 50V
C903	1-124-907-00	s	ELECT 10 20% 50V
C904	1-124-907-00	s	ELECT 10 20% 50V
C905	1-124-468-11	s	ELECT 100 20% 6.3V
C906	1-124-468-11	s	ELECT 100 20% 6.3V
C907	1-162-282-31	s	CERAMIC 100PF 10% 50V
C908	1-162-282-31	s	CERAMIC 100PF 10% 50V
C911	1-124-907-00	s	ELECT 10 20% 50V
C912	1-124-907-00	s	ELECT 10 20% 50V
C913	1-124-907-00	s	ELECT 10 20% 50V
C914	1-124-907-00	s	ELECT 10 20% 50V
C915	1-124-468-11	s	ELECT 100 20% 6.3V
C916	1-124-468-11	s	ELECT 100 20% 6.3V
C917	1-124-907-00	s	ELECT 10 20% 50V
C918	1-124-907-00	s	ELECT 10 20% 50V
C919	1-162-282-31	s	CERAMIC 100PF 10% 50V
C920	1-162-282-31	s	CERAMIC 100PF 10% 50V
C921	1-162-306-31	s	CERAMIC 0.01 20% 16V
C922	1-162-306-31	s	CERAMIC 0.01 20% 16V
C951	1-123-332-00	s	ELECT 47 20% 25V
C952	1-124-445-00	s	ELECT 100 20% 16V
C953	1-123-321-00	s	ELECT 220 20% 16V
C954	1-123-332-00	s	ELECT 47 20% 25V
C955	1-124-907-00	s	ELECT 10 20% 50V
C956	1-123-332-00	s	ELECT 47 20% 25V
CV1	1-141-246-00	s	VAR, TRIMMER

Ref.No.	Parts No.	SP	Description
D1	8-719-911-19	s	1SS119
D101	8-719-911-19	s	1SS119
D102	8-719-911-19	s	1SS119
D103	8-719-911-19	s	1SS119
D203	8-719-911-19	s	1SS119
D204	8-719-911-19	s	1SS119
D205	8-719-911-19	s	1SS119
D206	8-719-911-19	s	1SS119
D207	8-719-911-19	s	1SS119
D301	8-719-139-07	s	RD3.9E-B
D302	8-719-911-19	s	1SS119
D303	8-719-911-19	s	1SS119
D951	8-719-911-19	s	1SS119
D952	8-719-200-02	s	10E-2
DL1	1-415-242-00	s	COIL,42ns
DL2	1-415-373-11	s	1H
FL1	1-235-807-11	s	HPF
FL2	1-235-808-11	s	LPF
FL3	1-235-809-11	s	LPF
FL4	1-235-811-11	s	BPF
IC1	8-751-340-10	s	CX134A(SONY)
IC2	8-751-350-10	s	CX135(SONY)
IC3	8-751-880-00	s	CX188(SONY)
IC4	8-759-908-59	s	CX859(SONY)
IC5	8-759-001-16	s	MC10116L(MOTOROLA)
IC6	8-759-200-60	s	TA7060AP(TOSHIBA)
IC7	8-759-240-01	s	TC4001BP(TOSHIBA)
IC901	8-759-800-66	s	LA3161(SANYO)
IC902	8-759-800-36	s	LA3160(SANYO)
L3	1-410-071-11	s	MICRO 10mH
L5	1-410-071-11	s	MICRO 10mH
L7	1-410-119-11	s	MICRO 1mH
L211	1-407-500-00	s	MICRO 4.7mH
L212	1-407-500-00	s	MICRO 4.7mH
L213	1-410-092-11	s	MICRO 27mH
LV1	1-426-184-11	s	BURST AMP
LV2	1-426-188-11	s	BPT
LV3	1-426-190-11	s	BPT
Q1	8-729-800-43	s	2SK152-3
Q2	8-729-800-43	s	2SK152-3
Q3	8-729-606-34	s	2SC2603-G
Q4	8-729-603-50	s	2SC403SP
Q5	8-729-603-50	s	2SC403SP
Q7	8-729-178-54	s	2SC2785
Q8	8-729-178-54	s	2SC2785
Q9	8-729-178-54	s	2SC2785
Q10	8-729-117-54	s	2SA1175
Q11	8-729-606-34	s	2SC2603-G
Q12	8-729-201-05	s	2SC2878-B
Q101	8-729-603-50	s	2SC403SP
Q102	8-729-117-54	s	2SA1175
Q103	8-729-603-50	s	2SC403SP
Q104	8-729-603-50	s	2SC403SP

Ref.No.	Parts No.	SP	Description
Q105	8-729-603-50	s	2SC403SP
Q106	8-729-603-50	s	2SC403SP
Q107	8-729-603-50	s	2SC403SP
Q108	8-729-603-50	s	2SC403SP
Q109	8-729-603-50	s	2SC403SP
Q110	8-729-603-50	s	2SC403SP
Q111	8-729-603-50	s	2SC403SP
Q112	8-729-117-54	s	2SA1175
Q113	8-729-178-54	s	2SC2785
Q114	8-729-603-50	s	2SC403SP
Q115	8-729-603-50	s	2SC403SP
Q116	8-729-603-50	s	2SC403SP
Q117	8-729-603-50	s	2SC403SP
Q201	8-729-603-50	s	2SC403SP
Q202	8-729-603-50	s	2SC403SP
Q203	8-729-603-50	s	2SC403SP
Q204	8-729-201-05	s	2SC2878-B
Q205	8-729-603-50	s	2SC403SP
Q206	8-729-178-54	s	2SC2785
Q207	8-729-178-54	s	2SC2785
Q208	8-729-178-54	s	2SC2785
Q209	8-729-603-50	s	2SC403SP
Q210	8-729-603-50	s	2SC403SP
Q211	8-729-117-54	s	2SA1175
Q212	8-729-178-54	s	2SC2785
Q213	8-729-178-54	s	2SC2785
Q301	8-729-117-54	s	2SA1175
Q302	8-729-113-33	s	2SB733-4
Q303	8-729-606-34	s	2SC2603-G
Q304	8-729-178-54	s	2SC2785
Q305	8-729-178-54	s	2SC2785
Q306	8-729-603-50	s	2SC403SP
Q307	8-729-201-05	s	2SC2878-B
Q308	8-729-178-54	s	2SC2785
Q901	8-729-178-54	s	2SC2785
Q902	8-729-178-54	s	2SC2785
Q903	8-729-178-54	s	2SC2785
Q904	8-729-178-54	s	2SC2785
Q951	8-729-117-54	s	2SA1175
Q952	8-729-178-54	s	2SC2785
⚠R11	1-249-391-11	s	CARBON 6.8 5% 1/6W
R55	1-215-446-00	s	METAL 11k 1% 1/6W
R110	1-215-421-00	s	METAL 1k 1% 1/6W
R113	1-215-417-00	s	METAL 680 1% 1/6W
R116	1-215-425-00	s	METAL 1.5k 1% 1/6W
R163	1-215-394-00	s	METAL 75 1% 1/6W
R164	1-215-394-00	s	METAL 75 1% 1/6W
R207	1-215-424-00	s	METAL 1.3k 1% 1/6W
R303	1-215-429-00	s	METAL 2.2k 1% 1/6W
R304	1-215-444-00	s	METAL 9.1k 1% 1/6W
R308	1-215-468-00	s	METAL 91k 1% 1/6W
RV1	1-228-991-00	s	VAR, METAL GLAZE 2.2k
RV2	1-228-991-00	s	VAR, METAL GLAZE 2.2k
RV3	1-228-991-00	s	VAR, METAL GLAZE 2.2k
RV4	1-228-991-00	s	VAR, METAL GLAZE 2.2k
RV5	1-228-993-00	s	VAR, METAL GLAZE 4.7k
RV6	1-228-991-00	s	VAR, METAL GLAZE 2.2k
RV7	1-228-990-00	s	VAR, METAL GLAZE 1k
RV8	1-228-993-00	s	VAR, METAL GLAZE 4.7k
RV9	1-228-993-00	s	VAR, METAL GLAZE 4.7k
RV10	1-228-993-00	s	VAR, METAL GLAZE 4.7k
RV11	1-228-995-00	s	VAR, METAL GLAZE 22k
RV12	1-228-990-00	s	VAR, METAL GLAZE 1k
RV13	1-228-995-00	s	VAR, METAL GLAZE 22k
RV901	1-228-991-00	s	VAR, METAL GLAZE 2.2k
RV902	1-228-991-00	s	VAR, METAL GLAZE 2.2k
RV903	1-228-994-00	s	VAR, METAL GLAZE 10k
RV904	1-228-994-00	s	VAR, METAL GLAZE 10k
T1	1-426-018-00	s	AF
T2	1-426-018-00	s	AF
X1	1-527-345-00	s	CRYSTAL,4.433619MHz

FRAME

Ref.No.	Parts No.	SP	Description
	⚠1-413-249-11	s	SWITCHING REGULATOR
	1-556-760-11	s	CORD, POWER
CN1001	1-509-546-00	s	3P INLET "AC IN"
CN1002	1-563-356-11	s	8P MULTI "TV"
CN1003	1-563-354-11	s	BNC "VIDEO OUT"
CN1004	1-563-353-11	s	PIN JACK "AUDIO CH-1 OUT"
CN1005	1-563-353-11	s	PIN JACK "AUDIO CH-2 OUT"
CN1006	1-563-355-11	s	MINI JACK "AUDIO MONITOR OUT"
CN1007	1-507-195-21	s	"REMOTE"
CN1011	1-560-403-00	s	"RF MOD"
CN1012	1-555-977-00	s	"RF OUT"
H1001	A-6709-560-A	s	DUR-37-R UPPER DRUM ASSY
H1002	8-829-358-41	s	PP150-5803B "AUDIO CH-1/CH-2 PB, CTL PB"
H1003	8-825-514-20	s	PP170-58 "FR CTL"
M1001	8-835-177-01	s	DC BHF-1915A "CAPSTAN"
M1002	A-6709-558-A	s	DUH-37A-R DRUM ASSY
M1003	8-835-055-01	s	DC DNR-4700A "THREADING"
M1005	8-735-179-01	s	DC MCB2B15 "CASSETTE COMPARTMENT"
M1006	8-735-178-01	s	DC FN30-T26N1E "REEL"
PL1001	1-518-508-00	s	CASSETTE COMPARTMENT 12V, 55mA
PL1002	1-518-508-00	s	CASSETTE COMPARTMENT 12V, 55mA
PM1001	1-454-415-11	s	12V 9.5/52ohm "T-IDLER"
PM1002	1-454-417-11	s	12V 12/90ohm "T-BRAKE"
PM1004	1-454-415-11	s	12V 9.5/52ohm "S-IDLER"
PM1005	1-454-417-11	s	12V 12/90ohm "S-BRAKE"
PM1006	1-454-284-00	s	12V 80ohm "SKEW"

Ref.No.	Parts No.	SP	Description
PM1007	1-454-417-11	s	12V 12/90ohm "SEARCH"
PM1008	1-454-416-11	s	12V 7/35ohm "PINCH"
RV1001	1-237-215-11	s	VAR,CARBON 100k "TRACKING"
⚠ S1001	1-570-117-31	s	ROCKER "POWER"
S1002	1-552-271-00	s	SLIDE "TIMER"
S1006	1-516-781-XX	s	SLIDE "COLOR LOCK"

15-4. PACKING MATERIAL AND ACCESSORY (SUPPLIED)

Part No.	SP	Description
1-556-760-11	s	CORD, POWER (3 CORE)
3-662-364-00	s	BAG, PROTECTION
3-710-821-01	o	INDIVIDUAL CARTON
3-710-822-01	o	CUSHION (LOWER)
3-710-823-01	o	CUSHION (UPPER)
3-765-318-11	s	MANUAL, INSTRUCTION

15-5. FIXTURE (OPTIONAL)

part No.	SP	Description
J-6001-820-A	s	DRUM ECCENTRICITY GAUGE (3)
J-6001-830-A	s	DRUM ECCENTRICITY GAUGE (2)
J-6001-840-A	s	DRUM ECCENTRICITY GAUGE (1)
J-6001-930-A	s	DRUM ECCENTRICITY GAUGE (4)
J-6009-830-A	s	FLATNESS PLATE
J-6026-240-A	s	ADJUSTMENT DRIVER (FOR ELECTRICAL ALIGNMENT)
J-6130-010-A	s	REEL TABLE HEIGHT CHECK BASE JIG
J-6130-020-A	s	REEL TABLE HEIGHT CHECK JIG
J-6153-020-A	s	DIHEDRAL ADJUSTMENT SCREWDRIVER
Y-2031-001-0	s	CLEANING FLUID
2-034-697-00	s	CLEANING PIECE
3-702-215-01	s	TORQUE MEASUREMENT TAPE (100MM DIA.)
3-702-216-01	s	BACK TENSION ADJUSTMENT JIG
7-661-018-01	s	SONY OIL
7-732-050-20	s	TENSION SCALE (50G FULL SCALE)
7-732-050-30	s	TENSION SCALE (100G FULL SCALE)
7-732-050-40	s	TENSION SCALE (200G FULL SCALE)
7-732-050-50	s	TENSION SCALE (500G FULL SCALE)
8-960-035-61	s	ALIGNMENT TAPE, RR5-2SC PAL
9-911-053-00	s	THICKNESS GAUGE
Standard Products	s	HEAD DEMAGNETIZER, HE-4